Access DB# 90396

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: RAMSEY ZACHARIA Examiner #: 76138 Date: MAR 3 2003
Art Unit: 1773 Phone Number 305-0503 Serial Number: 09/807,904
Mail Box and Bldg/Room Location: CP3 11A01 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

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Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Organic-inorganic composite graded material, method of preparation thereof, and use thereof.

Inventors (please provide full names):

Earliest Priority Filing Date: 10/22/98

***For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.**

A material comprising an organic polymer chemically bonded to a metal or metallic compound wherein the ratio of metal to organic polymer changes continuously from the surface of the material through its depth

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STAFF USE ONLY	Type of Search	Vendors and cost where applicable
Searcher: Est	NA Sequence (#)	STN 1.21.15
Searcher Phone #:	AA Sequence (#)	Dialog
Searcher Location:	Structure (#) (1)	Questel/Orbit
Date Searcher Picked Up:	Bibliographic (2nd)	Dr.Link
Date Completed: 4-2-03	Litigation	Lexis/Nexis
Searcher Prep & Review Time: 5	Fulltext	Sequence Systems
Clerical Prep Time:	Patent Family	WWW/Internet
Online Time: 65	Other	Other (specify)

PTO-1590 (1-2000)

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FILE 'REGISTRY' ENTERED AT 13:16:27 ON 02 APR 2003
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     FILE 'HCAPLUS' ENTERED AT 11:08:35 ON 02 APR 2003
L1         38399 SEA HASHIMOTO ?/AU
L2          2624 SEA FUJISHIMA ?/AU
L3         23440 SEA NAKAYAMA ?/AU
L4        126876 SEA SUZUKI ?/AU
L5        115029 SEA TANAKA ?/AU
L6          6088 SEA TACHIBANA ?/AU
L7         17087 SEA ADACHI ?/AU
L8             1 SEA L1 AND L2 AND L3 AND L4 AND L5 AND L6 AND L7

                 SEL L8 1 RN

     FILE 'REGISTRY' ENTERED AT 11:09:29 ON 02 APR 2003
L9             8 SEA (13463-67-7/BI OR 149581-08-8/BI OR 164864-39-5/BI

L10            6 SEA L9 AND PMS/CI
L11            1 SEA L10 AND TI/ELS
L12            2 SEA L9 NOT L10
                 E TITANIA/CN
L13            1 SEA TITANIA/CN

     FILE 'HCAPLUS' ENTERED AT 11:17:08 ON 02 APR 2003
L14            2 SEA L11
L15           18 SEA L10
L16       202809 SEA L13 OR (TITANIUM# OR TI)(W)(OXIDE# OR DIOXIDE#) OR
                 TITANIA# OR TIO2
L17            2 SEA L15 AND L16
                 E COATING MATERIALS/CV
L18       232181 SEA "COATING MATERIALS"/CV
                 E COATING PROCESS/CV
L19       103145 SEA "COATING PROCESS"/CV
L20       362170 SEA RECORD? OR (MAGNETIC? OR AUDIO? OR VIDEO?)(2A)(TAPE#
                 OR TAPING#) OR AUDIOTAP? OR VIDEOTAP? OR MAGNETIC?(2A)(FI
                 LM? OR COAT? OR LAYER? OR COMPOSITE# OR LAMIN? OR LAMEL?
                 OR MULTILAYER?)
L21            6 SEA L15 AND (L18 OR L19 OR L20)
L22        10460 SEA (GRADE OR GRADES OR GRADED OR GRADIEN? OR GRADUAT?)(3
                 A)(COMPOSITE# OR COATING# OR FILM? OR LAYER? OR MULTILAYE
                 R? OR LAMIN? OR LAMEL?)
L23              QUE POLYM# OR POLYMER? OR COPOLYM# OR COPOLYMER? OR
                 HOMOPOLYM# OR HOMOPOLYMER? OR RESIN?
L24          276 SEA (GRADE OR GRADES OR GRADED OR GRADIEN? OR GRADUAT?)(3
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                R? OR LAMIN? OR LAMEL?)(3A)L23
L25          30 SEA (GRADE OR GRADES OR GRADED OR GRADIEN? OR GRADUAT?)(3
                A)METAL####(3A)L23
L26           0 SEA L25 AND L15
L27           1 SEA L25 AND L16
L28           7 SEA L25 AND (L18 OR L19 OR L20)
L29          40 SEA L24 AND METAL####
L30          14 SEA L24 AND L16
L31          19 SEA (L29 OR L30) AND (L18 OR L19 OR L20)
L32          18 SEA (ORG# OR ORGANIC?)(5A)(INORG# OR INORGANIC?)(5A)(GRAD
                E OR GRADES OR GRADED OR GRADING# OR GRADIEN? OR
                GRADUAT?)(5A)COMPOSITE#
L33          12 SEA L32 AND (L15 OR L16 OR L18 OR L19 OR L20)


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L36           4 SEA L35 AND (L32 OR L25 OR L24)
L37           5 SEA L35 AND L22
L38         248 SEA L35 AND (L18 OR L19 OR L20)
L39             QUE GRADE OR GRADES OR GRADED OR GRADING# OR GRADIEN? OR
                GRADUAT?
L40           4 SEA L38 AND L39

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L41       64370 SEA SI/ELS AND PMS/CI

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L43        2712 SEA L42 AND L16
L44        1031 SEA L43 AND (L18 OR L19 OR L20)
L45           4 SEA L44 AND L39
L46           4 SEA L43 AND (L24 OR L25 OR L32)
L47          11 SEA L43 AND L39
L48           7 SEA L47 AND L22
L49           6 SEA L47 AND (35 OR 36 OR 37 OR 38)/SC,SX
L50          24 SEA L14 OR L17 OR L21 OR L27 OR L28 OR L36 OR L37 OR L40
                OR L45 OR L46 OR L48 OR L49
L51          10 SEA (L33 OR L47) NOT L50
L52          13 SEA L31 NOT (L50 OR L51)


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L50 ANSWER 1 OF 24 HCAPLUS COPYRIGHT 2003 ACS
2003:112921 Document No. 138:138546 Photocatalytic films with good weather and bending resistance, transparency, and interlayer adhesion. Nishikawa, Ryozo; Tanaka, Naoki; Tachibana, Eisuke; Nakayama, Norihiro (Ube Nitto Kasei Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2003041034 A2 20030213, 17 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-28452 20020205 PRIORITY: JP 2001-29471 20010206; JP 2001-156768 20010525.

AB The films comprise (a) plastic base **films**, (b) org.-inorg. **gradient films** showing av. thickness 40-100 nm and excellent crack resistance on a bending test (condition given), and (c) photocatalytic layers. Thus, Tetoron HB 3 (weather-resistant PET film) was coated with a soln. contg. Ti(OPr-iso)4 and Me methacrylate-.gamma.-methacryloyloxypropyltrimethoxysilane copolymer and further coated with Bistrater L-NSC 200C (photocatalyst coating) to give a photocatalytic film.

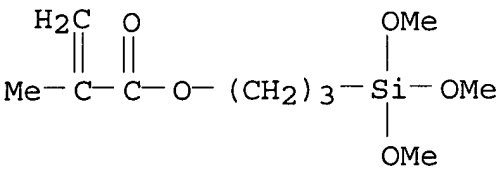
IT **265097-47-0P**, (.gamma.-Methacryloyloxypropyl)trimethoxysilan emethyl methacrylate-titanium tetraisopropoxide **copolymer** (**gradient layer**; weather- and bending-resistant plastic films having photocatalyst **layers** and org.-inorg. **gradient layers**)

RN 265097-47-0 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 2-propanol titanium(4+) salt and 3-(trimethoxysilyl)propyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

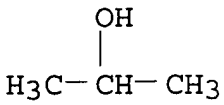
CM 1

CRN 2530-85-0
CMF C10 H20 O5 Si



CM 2

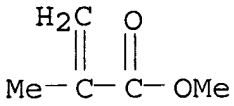
CRN 546-68-9
CMF C3 H8 O . 1/4 Ti



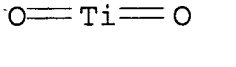
1/4 Ti(IV)

CM 3

CRN 80-62-6
CMF C5 H8 O2



IT **13463-67-7**, Bistrater L-NSC 200C, uses
(weather- and bending-resistant plastic films having photocatalyst **layers** and org.-inorg. **gradient layers**)
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



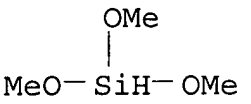
IC ICM C08J007-04
ICS C08J007-04; B01J035-02; B32B007-02; B32B009-00; C08L101-00
CC **38-3** (Plastics Fabrication and Uses)
ST photocatalytic **film** org inorg **gradient layer**; PET film photocatalytic titanate methacrylate composite
IT Polyesters, uses
(base film; weather- and bending-resistant plastic films having photocatalyst **layers** and org.-inorg. **gradient layers**)
IT Acrylic polymers, uses
Polycarbonates, uses
(base films; weather- and bending-resistant plastic films having photocatalyst **layers** and org.-inorg. **gradient layers**)
IT Ceramers
(**gradient layers**; weather- and bending-resistant plastic films having photocatalyst **layers** and org.-inorg. **gradient layers**

)
IT Photolysis catalysts
Plastic films
(weather- and bending-resistant plastic films having photocatalyst **layers** and org.-inorg. **gradient layers**)
IT 478691-77-9
(UV-absorbing layer; weather- and bending-resistant plastic films having photocatalyst **layers** and org.-inorg. **gradient layers**)
IT 25038-59-9, Poly(ethylene terephthalate), uses 172641-25-7, Iupilon FE 2000 494790-26-0, Sunduren SD 009NAT
(base film; weather- and bending-resistant plastic films having photocatalyst **layers** and org.-inorg. **gradient layers**)
IT **265097-47-0P**, (.gamma.-Methacryloyloxypropyl)trimethoxysilan emethyl methacrylate-titanium tetraisopropoxide **copolymer**
(**gradient layer**; weather- and bending-resistant plastic films having photocatalyst **layers** and org.-inorg. **gradient layers**
)
IT **13463-67-7**, Bistrater L-NSC 200C, uses
(weather- and bending-resistant plastic films having photocatalyst **layers** and org.-inorg. **gradient layers**)

L50 ANSWER 2 OF 24 HCAPLUS COPYRIGHT 2003 ACS
2003:17257 Document No. 138:57212 Weather-resistant steel sidings showing good coating **layer** adhesion and high-**grade** appearance. Matsushita, Yoshiaki; Toyonaka, Takashi (Kansai Paint Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2003001749 A2 20030108; 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-187446 20010621.
AB The sidings comprise embossed and backside-lined PCM steel sheets coated with pigmented aq. base coatings contg. crosslinked core-shell acrylic silicone emulsions and silane coupling agents by rolls on one side. The silicone emulsions may copolymerize 5-50% (based on solids) cyclohexyl methacrylate. The base coating layers may be further coated with clear topcoats. Thus, a steel sheet having precoated and embossed surface and Al- and cellular polyurethane-lined back surface was coated with a compn. of G 620 (acrylic silicone latex), .beta.-(3,4-epoxycyclohexyl)ethyltriethoxy silane, and **titania** paste by a roller and dried to give a siding with good smoothness, high gloss retention after 240-h accelerated weathering test, and good adhesion of coating after 10-h immersion in boiling water.
IT **214963-44-7P**, Tetraethoxysilane-trimethoxysilane copolymer
(topcoat layers; weather-resistant precoated metal sidings having aq. base coating layers with good adhesion to substrates)
RN 214963-44-7 HCAPLUS
CN Silicic acid (H4SiO4), tetraethyl ester, polymer with trimethoxysilane (9CI) (CA INDEX NAME)

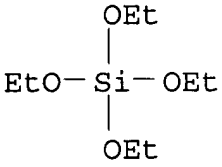
CM 1

CRN 2487-90-3
CMF C3 H10 O3 Si



CM 2

CRN 78-10-4
CMF C8 H20 O4 Si



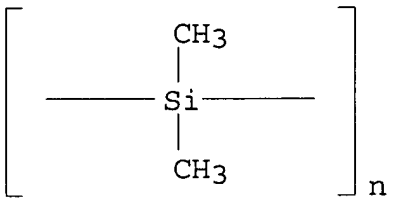
IC ICM B32B015-08
ICS B05D005-06; B05D007-24; B32B003-30; E04F013-12
CC **38-3** (Plastics Fabrication and Uses)
Section cross-reference(s): 42, 55, 58
IT **Coating materials**
(weather-resistant, waterborne; weather-resistant precoated metal sidings having aq. base coating layers with good adhesion to substrates)
IT **214963-44-7P**, Tetraethoxysilane-trimethoxysilane copolymer
(topcoat layers; weather-resistant precoated metal sidings having aq. base coating layers with good adhesion to substrates)

L50 ANSWER 3 OF 24 HCAPLUS COPYRIGHT 2003 ACS
2002:975927 Document No. 138:43312 Silica-based **composite** oxide fiber having **graded** composition and its manufacture for catalyst. Ishikawa, Toshihiro; Harada, Yoshikatsu; Hayashi, Hidekuni; Kajii, Shinji (Ube Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002371436 A2 20021226, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-171956 20010607. PRIORITY: JP 2000-176377 20000613; JP 2001-113585 20010412.
AB The title fiber consists of a SiO2-based first oxide phase and a second oxide phase contg. a metal oxide other than SiO2, where .gtoreq.1 metal provides higher **graded** concn. toward surface. The second oxide phase may contain .ltoreq.15 nm-grain size **TiO2** to give optical and/or thermal catalytic functions. The fiber is manufd. from a polycarbosilane SiR2CH2 (R =

H, lower alkyl, or Ph) having no. av. mol. wt. 200-10,000 which is modified with an organometal compd. or a mixt. of the modified carbosilane and an organometal compd. by melt spinning, infusibilizing, and then firing in air or O. The fiber has high strength and shows antibacterial properties.

IT **28883-63-8DP**, Poly(dimethylsilylene), thermolysis products
30107-43-8DP, Dimethyldichlorosilane homopolymer, thermolysis products
(silica-based dual-phase oxide fiber having **graded** compn. manufd. from organometal compd.-modified polycarbosilane for photocatalyst)

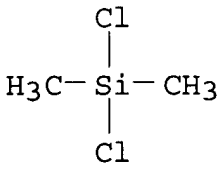
RN 28883-63-8 HCAPLUS
CN Poly(dimethylsilylene) (8CI, 9CI) (CA INDEX NAME)



RN 30107-43-8 HCAPLUS
CN Silane, dichlorodimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-78-5
CMF C2 H6 Cl2 Si



IC ICM D01F009-08
ICS B01J035-02; B01J035-06; B01J037-00; D01F009-10
CC 57-2 (Ceramics)
Section cross-reference(s): 5, 74
ST silica **titania** fiber **graded** concn photolysis catalyst; polycarbosilane silica **titania** oxide fiber manuf
IT Antibacterial agents
Photolysis catalysts
(silica-based dual-phase oxide fiber having **graded** compn. manufd. from organometal compd.-modified polycarbosilane for photocatalyst)
IT Polycarbosilanes
(silica-based dual-phase oxide fiber having **graded**

compn. manufd. from organometal compd.-modified polycarbosilane for photocatalyst)

IT Synthetic fibers
(silica-**titanium oxide**; silica-based dual-phase oxide fiber having **graded** compn. manufd. from organometal compd.-modified polycarbosilane for photocatalyst)

IT Polysilanes
(thermolysis products; silica-based dual-phase oxide fiber having **graded** compn. manufd. from organometal compd.-modified polycarbosilane for photocatalyst)

IT 52337-09-4P, Silicon **titanium oxide**
(fiber; silica-based dual-phase oxide fiber having **graded** compn. manufd. from organometal compd.-modified polycarbosilane for photocatalyst)

IT **28883-63-8DP**, Poly(dimethylsilylene), thermolysis products **30107-43-8DP**, Dimethyldichlorosilane homopolymer, thermolysis products
(silica-based dual-phase oxide fiber having **graded** compn. manufd. from organometal compd.-modified polycarbosilane for photocatalyst)

IT 5593-70-4, Tetrabutoxytitanium
(silica-based dual-phase oxide fiber having **graded** compn. manufd. from organometal compd.-modified polycarbosilane for photocatalyst)

L50 ANSWER 4 OF 24 HCAPLUS COPYRIGHT 2003 ACS
2002:606438 Document No. 137:155819 **Organic-inorganic** component-**gradient composite** materials, their **coatings** with good crack resistance, and their structures. Koike, Tadashi; Suzuki, Taro; Kobayashi, Akihiro; Tachibana, Eisuke (Ube Nitto Kasei Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002226588 A2 20020814, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-28211 20010205.

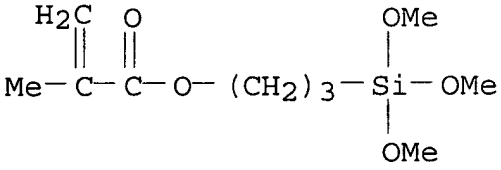
AB The materials comprise hydrolysis reaction products of (A) org. polymers having metal-contg. groups, which can be linked to metal oxides by hydrolysis, with (B) metal oxide-based compds. contg. mixts. of (10-95):(5-90) (based on metal atom ratio) (a) R1mM1 (R1 = hydrolyzable group; M1 = metal; m = valence of M1) or their condensed oligomers and (b) Php-qM2R2q [R2 = hydrolyzable group; M2 = metal; p = valence of M2; 0 < q < (p - 1)] or their condensed oligomers. Thus, .gamma.-methacryloxypropyltrimethoxysilane-Me methacrylate copolymer was mixed with a mixt. of 9:1 (Si ratio) MS 51 (tetramethoxysilane oligomer) and phenyltrimethoxysilane, applied on a PMMA plate, and heated to give a component-**gradient film**, which was coated with NSC 200C (photocatalyst coating) and heated to give a film with haze 0.3% and good weather resistance.

IT **26936-30-1P**, .gamma.-Methacryloxypropyltrimethoxysilane-methyl methacrylate **copolymer**
(**org.-inorg.** component-**gradient composite** materials with good crack resistance)

RN 26936-30-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 3-(trimethoxysilyl)propyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

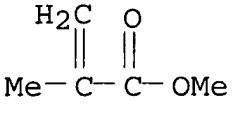
CM 1

CRN 2530-85-0
CMF C10 H20 O5 Si



CM 2

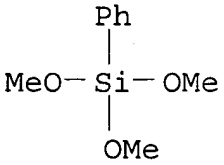
CRN 80-62-6
CMF C5 H8 O2



IT **446037-76-9P**
(**org.-inorg.** component-**gradient** **composite** materials with good crack resistance)
RN 446037-76-9 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with methyl silicate, trimethoxyphenylsilane and 3-(trimethoxysilyl)propyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

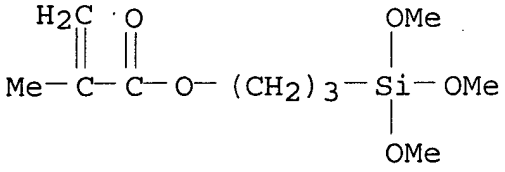
CM 1

CRN 2996-92-1
CMF C9 H14 O3 Si



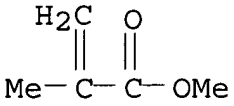
CM 2

CRN 2530-85-0
CMF C10 H20 O5 Si



CM 3

CRN 80-62-6
CMF C5 H8 O2



CM 4

CRN 12002-26-5
CMF C H4 O . x Unspecified

CM 5

CRN 1343-98-2
CMF Unspecified
CCI MAN

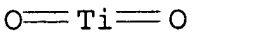
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 6

CRN 67-56-1
CMF C H4 O

IT **13463-67-7**, NSC 200C, uses
(photocatalyst **coating**; **org.-inorg.** component-**gradient composite** materials with good crack resistance)

RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



IC ICM C08G081-02
ICS C08G077-442; C08J007-04; C09D133-00; C09D183-10; C09D185-00; C08F230-04; C08L043-00
CC **38-3** (Plastics Fabrication and Uses)
Section cross-reference(s): 42
ST **org inorg composite gradient coating** acrylic polysiloxane; methacryloxypropylmethoxysilane methyl methacrylate methoxysilane phenylmethoxysilane ceramer; photocatalyst coating weather resistance ceramer
IT Polysiloxanes, uses
(acrylic-silicate-; **org.-inorg.** component-**gradient composite** materials with good crack resistance)
IT Ceramers
Coating materials
Photolysis catalysts
(**org.-inorg.** component-**gradient composite** materials with good crack resistance)
IT 9011-14-7, PMMA
(**org.** substrates; **org.-inorg.** component-**gradient composite** materials with good crack resistance)
IT **26936-30-1P**, .gamma.-Methacryloxypropyltrimethoxysilane-methyl methacrylate **copolymer**
(**org.-inorg.** component-**gradient composite** materials with good crack resistance)
IT **446037-76-9P**
(**org.-inorg.** component-**gradient composite** materials with good crack resistance)
IT **13463-67-7**, NSC 200C, uses
(photocatalyst **coating**; **org.-inorg.** component-**gradient composite** materials with good crack resistance)

L50 ANSWER 5 OF 24 HCAPLUS COPYRIGHT 2003 ACS
2002:553193 Document No. 137:95319 **Organic-inorganic composite gradient polymer** materials having deterioration resistance for coatings and their manufacture.
Tachibana, Eisuke; Suzuki, Taro; Nakayama, Tsunehiro (Ube Nitto Kasei Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002206059 A2 20020726, 16 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-3648 20010111.
AB The materials comprise org. polymers chem. connected with metal oxides whose content is successively changed toward the depth direction and polymer stabilizers whose content is 0 at the surface

and is successively increased toward the depth direction. Thus, a compn. contg.11.4:1.41:1.83 copolymer of Me methacrylate, 3-methacryloxypropyltrimethoxysilane, and polymerizable UV absorber (RUVA 93), soln. of polymer of (EtO)4Si, and soln. of polymer of (iso-PrO)4Ti was applied on a plate and heated to give a **film** showing good compn. **gradient.**

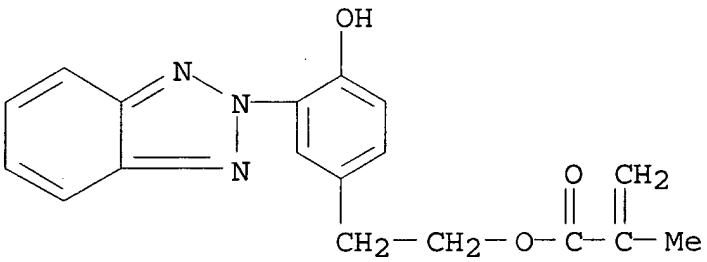
IT **442690-52-0P 442690-53-1P**
(org.-inorg. composite gradient polymer materials having deterioration resistance for coatings and their manuf.)

RN 442690-52-0 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-[3-(2H-benzotriazol-2-yl)-4-hydroxyphenyl]ethyl ester, polymer with methyl 2-methyl-2-propenoate, 2-propanol titanium(4+) salt, silicic acid (H4SiO4) tetraethyl ester and 3-(trimethoxysilyl)propyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

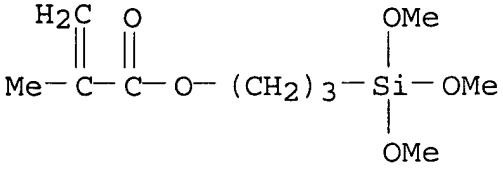
CM 1

CRN 96478-09-0
CMF C18 H17 N3 O3



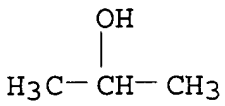
CM 2

CRN 2530-85-0
CMF C10 H20 O5 Si



CM 3

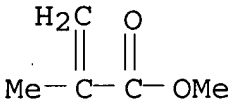
CRN 546-68-9
CMF C3 H8 O . 1/4 Ti



1/4 Ti(IV)

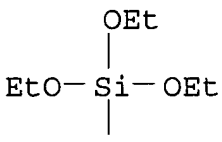
CM 4

CRN 80-62-6
CMF C5 H8 O2



CM 5

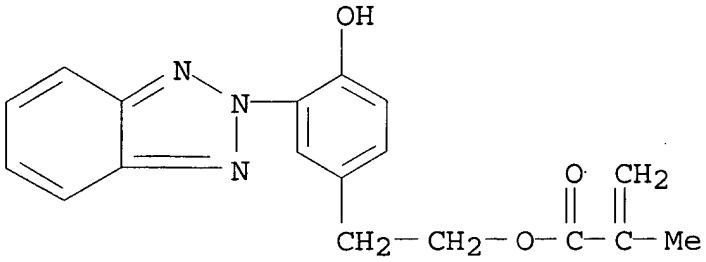
CRN 78-10-4
CMF C8 H20 O4 Si



RN 442690-53-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 2-[3-(2H-benzotriazol-2-yl)-4-hydroxyphenyl]ethyl ester, polymer with methyl 2-methyl-2-propenoate, 1,2,2,6,6-pentamethyl-4-piperidinyl 2-methyl-2-propenoate, 2-propanol titanium(4+) salt, silicic acid (H4SiO4) tetraethyl ester and 3-(trimethoxysilyl)propyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

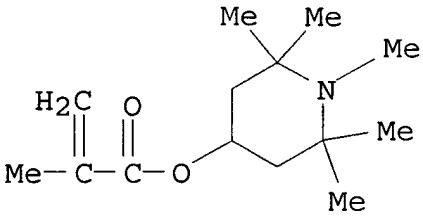
CM 1

CRN 96478-09-0
CMF C18 H17 N3 O3



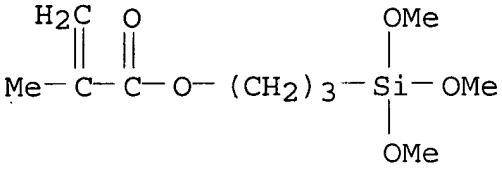
CM 2

CRN 68548-08-3
CMF C14 H25 N O2



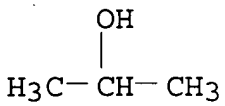
CM 3

CRN 2530-85-0
CMF C10 H20 O5 Si



CM 4

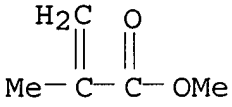
CRN 546-68-9
CMF C3 H8 O . 1/4 Ti



1/4 Ti(IV)

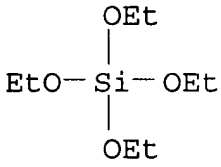
CM 5

CRN 80-62-6
CMF C5 H8 O2



CM 6

CRN 78-10-4
CMF C8 H20 O4 Si



IC ICM C08L101-02
ICS B32B005-14; C08K003-00; C09D007-12; C09D143-00; C09D201-02; C08F230-04; C08G081-02
CC 42-10 (Coatings, Inks, and Related Products)
ST **org inorg composite gradient polymer coating**; methacrylate methacryloxymethoxysilane ethoxysilane copolymer deterioration resistance; UV stabilizer methacrylate tetraethoxysilane copolymer
IT **Coating materials**
(UV-resistant; **org.-inorg. composite gradient polymer** materials having deterioration resistance for coatings and their manuf.)
IT **Coating materials**
(light-resistant; **org.-inorg. composite gradient polymer** materials

having deterioration resistance for coatings and their manuf.)

IT Ceramers
(**org.-inorg. composite**
gradient polymer materials having deterioration resistance for coatings and their manuf.)

IT **Coating materials**
(oxidn.-resistant; **org.-inorg.**
composite gradient polymer materials
having deterioration resistance for coatings and their manuf.)

IT **442690-52-0P 442690-53-1P**
(**org.-inorg. composite**
gradient polymer materials having deterioration resistance for coatings and their manuf.)

L50 ANSWER 6 OF 24 HCAPLUS COPYRIGHT 2003 ACS
2001:857507 Document No. 136:7270 **Organic-inorganic composite gradient** materials, their **coatings**, and coated materials. Tanaka, Naoki; Kobayashi, Akihiro; Takami, Kazuyuki; Nakayama, Norihiro (Ube Nitto Kasei Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001329018 A2 20011127, 19 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-382603 20001215. PRIORITY: JP 2000-76706 20000317.

AB The composite materials contain chem.-bonded composites of (A) org. copolymers of (a1) ethylenically unsatd. monomers bearing metal-contg. groups which can be bonded to metal oxides by hydrolysis and (a2) metal-free ethylenically unsatd. monomers and (B) metal oxide mixts. and/or reaction products of (b1) Si alkoxides and/or their hydrolyzates and (b2) different metal alkoxides and/or their hydrolyzates, contents of the metals being changed continuously from the materials surfaces in the depth direction. Thus, a PET film (Tetron HB 3) coated with a coating contg. 10.9:1.36 Me methacrylate-3-methacryloxypropyltrimethoxysilane copolymer 1, (i-PrO)4Ti hydrolyzate 1.2, and (EtO)4Si hydrolyzate 0.6 mL showed excellent flexibility and layer adhesion. A photocatalyst (Bistrater L-NSC 200C) applied on the film showed super hydrophilicity even after accelerated weather resistance.

IT **197727-48-3P 331941-46-9P 375346-42-2P 375346-43-3P**
(**org.-inorg. composite**
gradient materials for intermediate **layers** for photocatalyst layers)

RN 197727-48-3 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1-butanol titanium(4+) salt, silicic acid (H4SiO4) tetraethyl ester and 3-(trimethoxysilyl)propyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

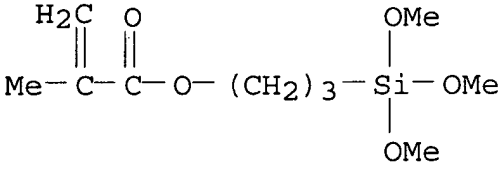
CM 1

CRN 5593-70-4
CMF C4 H10 O . 1/4 Ti

1/4 Ti(IV)

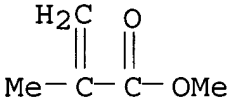
CM 2

CRN 2530-85-0
CMF C10 H20 O5 Si



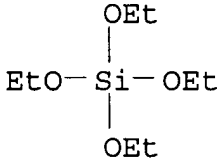
CM 3

CRN 80-62-6
CMF C5 H8 O2



CM 4

CRN 78-10-4
CMF C8 H20 O4 Si

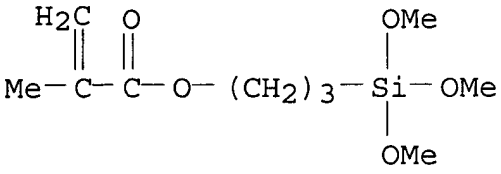


RN 331941-46-9 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 2-propanol titanium(4+) salt, silicic acid (H4SiO4) tetraethyl ester and

3-(trimethoxysilyl)propyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

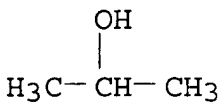
CM 1

CRN 2530-85-0
CMF C10 H20 O5 Si



CM 2

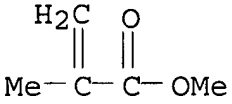
CRN 546-68-9
CMF C3 H8 O . 1/4 Ti



1/4 Ti(IV)

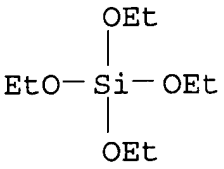
CM 3

CRN 80-62-6
CMF C5 H8 O2



CM 4

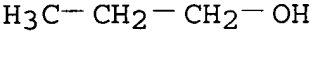
CRN 78-10-4
CMF C8 H20 O4 Si



RN 375346-42-2 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1-propanol zirconium(4+) salt, silicic acid (H4SiO4) tetraethyl ester and 3-(trimethoxysilyl)propyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

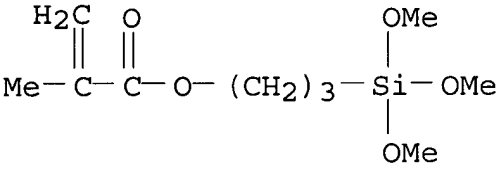
CRN 23519-77-9
CMF C3 H8 O . 1/4 Zr



1/4 Zr(IV)

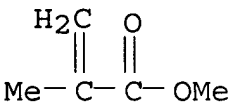
CM 2

CRN 2530-85-0
CMF C10 H20 O5 Si



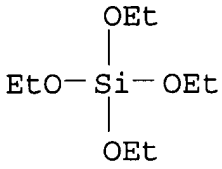
CM 3

CRN 80-62-6
CMF C5 H8 O2



CM 4

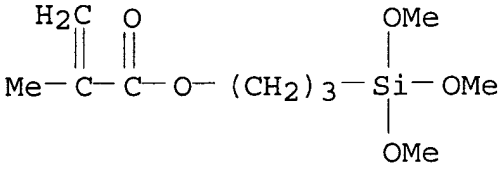
CRN 78-10-4
CMF C8 H20 O4 Si



RN 375346-43-3 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 2-butanol aluminum salt, silicic acid (H4SiO4) tetraethyl ester and 3-(trimethoxysilyl)propyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

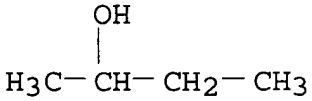
CM 1

CRN 2530-85-0
CMF C10 H20 O5 Si



CM 2

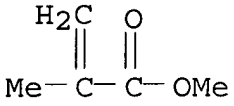
CRN 2269-22-9
CMF C4 H10 O . 1/3 Al



1/3 Al

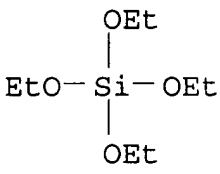
CM 3

CRN 80-62-6
CMF C5 H8 O2

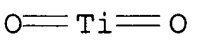


CM 4

CRN 78-10-4
CMF C8 H20 O4 Si



IT **13463-67-7**, Bistrater L-NSC 200C, uses
(super hydrophilic **coating**; **org.-inorg. composite gradient** materials for intermediate **layers** for photocatalyst layers)
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



IC ICM C08F008-00
ICS B01J032-00; B01J035-02; B32B009-00; C09D143-00; C09D183-04; C09D185-00; C08F220-04
CC **38-3** (Plastics Fabrication and Uses)
Section cross-reference(s): 42, 67
ST **org inorg composite gradient film coating**; ceramer acrylic polymer metal alkoxide composite; titanium silicon alkoxide acrylic polymer composite; **titania** silica acrylic **polymer composite gradient**
IT Polyesters, uses
(Tetoron HB 3, substrate; **org.-inorg. composite gradient** materials for intermediate **layers** for photocatalyst layers)
IT **Coating materials**
(hydrophilic **coatings**; **org.-inorg.**

composite gradient materials for intermediate **layers** for photocatalyst layers as)

IT Ceramers
(**org.-inorg. composite gradient** materials for intermediate **layers** for photocatalyst layers)

IT Catalysts
(photochem.; **org.-inorg. composite gradient** materials for intermediate **layers** for photocatalyst layers)

IT Polycarbonates, uses
(substrate; **org.-inorg. composite gradient** materials for intermediate **layers** for photocatalyst layers)

IT 25038-59-9, Polyethylene terephthalate, uses
(Tetoron HB 3, substrate; **org.-inorg. composite gradient** materials for intermediate **layers** for photocatalyst layers)

IT **197727-48-3P 331941-46-9P 375346-42-2P 375346-43-3P**
(**org.-inorg. composite gradient** materials for intermediate **layers** for photocatalyst layers)

IT 9011-14-7, Acrylite L
(substrate; **org.-inorg. composite gradient** materials for intermediate **layers** for photocatalyst layers)

IT **13463-67-7**, Bistrater L-NSC 200C, uses
(super hydrophilic **coating**; **org.-inorg. composite gradient** materials for intermediate **layers** for photocatalyst layers)

L50 ANSWER 7 OF 24 HCAPLUS COPYRIGHT 2003 ACS
2001:823374 Document No. 135:359229 Manufacture of hybrid organic-inorganic gradient materials and articles coated therewith. Koike, Tadashi; Takami, Kazuyuki; Tanaka, Naoki; Nakayama, Tsunehiro (Ube Nitto Kasei Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001316430 A2 20011113, 26 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-169733 20000428.

AB The gradient materials are manufd. by prepg. a coating soln. contg. (A) a copolymer consisting of metal-free ethylenically unsatd. monomers and ethylenically unsatd. monomers bearing metal groups capable of bonding with metal oxides upon hydrolysis and (B) metal compds. capable of producing metal oxides upon hydrolysis, applying the soln. on a org. substrate, and heat drying to give a chem. bonded org.-metal oxide composite coat with gradient content of the oxide along the depth direction, where the copolymers of (A) component bear essentially no intramol.-crosslinking. The coatings therefrom exhibit excellent adhesion to org. supports and good weather resistance. Thus, a .gamma.-methacryloxypropyltrimethoxysilane-Me methacrylate copolymer (Mn 62,000)/Me2CO soln. and a Me Cellosolve-dissolved hydrolyzed Si(OEt)4/Me Cellosolve soln. were

mixed, applied on a PET substrate, and dried to give a weather-resistant coating film with cross-cut adhesion test 100/100.

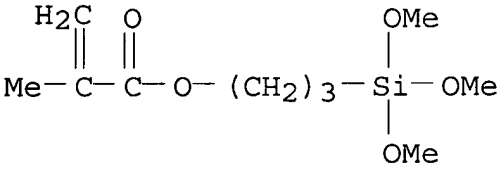
IT **149581-08-8P**, Methyl methacrylate-.gamma.-methacryloxypropyltrimethoxysilane-tetraethoxysilane copolymer (manuf. of hybrid org.-inorg. gradient materials and coated articles with good weather resistance and adhesion)

RN 149581-08-8 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with silicic acid (H4SiO4) tetraethyl ester and 3-(trimethoxysilyl)propyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

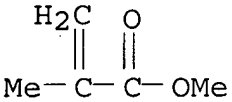
CM 1

CRN 2530-85-0
CMF C10 H20 O5 Si



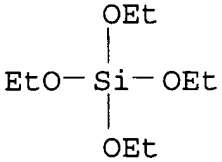
CM 2

CRN 80-62-6
CMF C5 H8 O2



CM 3

CRN 78-10-4
CMF C8 H20 O4 Si



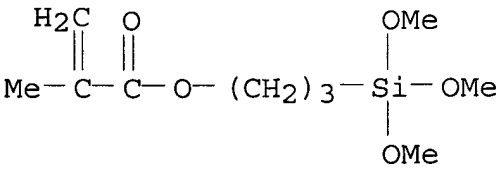
IC ICM C08F230-04
ICS B05D007-24; B32B005-14; B32B009-00; B32B015-04; B32B027-28;

C09D005-00; C09D143-00; C09D183-02; C09D185-00; G11B007-26
CC 42-10 (Coatings, Inks, and Related Products)
Section cross-reference(s): 38
IT **Coating materials**
(weather-resistant; manuf. of hybrid org.-inorg. gradient materials and coated articles with good weather resistance and adhesion)
IT **149581-08-8P**, Methyl methacrylate-.gamma.-methacryloxypropyltrimethoxysilane-tetraethoxysilane copolymer
(manuf. of hybrid org.-inorg. gradient materials and coated articles with good weather resistance and adhesion)

L50 ANSWER 8 OF 24 HCAPLUS COPYRIGHT 2003 ACS
2001:704849 Document No. 135:258643 Hybrid organic-inorganic materials with compositional gradient and applications thereof. Koike, Tadashi; Nakayama, Tsunehiro (Ube Nitto Kasei Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001261972 A2 20010926, 15 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-73385 20000316.
AB The title materials, showing a metal compn. gradient in the film thickness direction, are prepd. by chem. bonding of org. polymers with metal oxides selected from R1nSi(OR2)4-n [R1 = nonhydrolyzable (un)satd. org. group; R2 = C1-6 alkyl; n = 1-3], Si(OR3)4 (R3 = C1-10 hydrocarbyl), and partially hydrolyzed oligomeric products and/or condensates thereof. Thus, a soln. contg. .gamma.-methacryloyloxypropyltrimethoxysilane-Me methacrylate copolymer, hydrolyzed products of methyltrimethoxysilane, hydrolyzed products of Si(OEt)4 in org. solvents and water was applied on a PET film to give a crack-resistant flexible coating with water contact angle 20.degree..
IT **265097-48-1P**, .gamma.-Methacryloyloxypropyltrimethoxysilane-methyl methacrylate-methyltrimethoxysilane-tetraethoxysilane copolymer
(hybrid org.-inorg. materials with compositional gradient for crack-resistant flexible coatings)
RN 265097-48-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with silicic acid (H4SiO4) tetraethyl ester, trimethoxymethylsilane and 3-(trimethoxysilyl)propyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

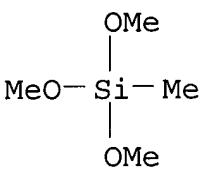
CM 1

CRN 2530-85-0
CMF C10 H20 O5 Si



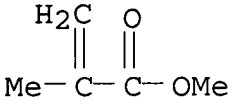
CM 2

CRN 1185-55-3
CMF C4 H12 O3 Si



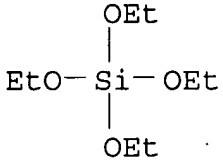
CM 3

CRN 80-62-6
CMF C5 H8 O2



CM 4

CRN 78-10-4
CMF C8 H20 O4 Si



IC ICM C08L101-00
ICS C08F220-10; C08F230-04; C08J007-04; C08K005-5415; C08L043-00; C08L083-04; C09D005-00; C09D157-00; C09D183-00; C09D201-02
CC 42-10 (Coatings, Inks, and Related Products)
IT **Coating materials**
(flexible; hybrid org.-inorg. materials with compositional gradient for crack-resistant flexible coatings)
IT **265097-48-1P**, .gamma.-Methacryloyloxypropyltrimethoxysilane-methyl methacrylate-methyltrimethoxysilane-tetraethoxysilane copolymer 362056-74-4P
(hybrid org.-inorg. materials with compositional gradient for

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crack-resistant flexible coatings)

L50 ANSWER 9 OF 24 HCAPLUS COPYRIGHT 2003 ACS
2001:704848 Document No. 135:258642 Hybrid organic-inorganic materials with compositional gradient and applications thereof. Nakayama, Norihiro; Suzuki, Taro; Tachibana, Eisuke (Ube Nitto Kasei Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001261970 A2 20010926, 13 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-71417 20000315.

AB The title materials, showing a metal compn. gradient in the film thickness direction, are obtained by chem. bonding of org. polymers with metal oxides selected from tetraisocyanatosilane (I), R1nSi(OR2)4-n [R1 = nonhydrolyzable (un)satd. org. group; R2 = C1-6 alkyl; n = 1-3], their partially hydrolyzed oligomeric products and/or condensates with Mw .ltoreq.2000. Thus, a soln. contg. I 1.38, .gamma.-methacryloyloxypropyltrimethoxysilane (II) 1.75, and II-Me methacrylate copolymer 0.05 g in 50 mL PhMe was applied on a PET film to give a crack-resistant flexible coating with water contact angle 30.degree..

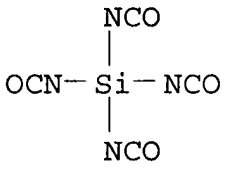
IT **265311-47-5P**
(hybrid org.-inorg. materials with compositional gradient for crack-resistant flexible coatings)

RN 265311-47-5 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with tetraisocyanatosilane and 3-(trimethoxysilyl)propyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

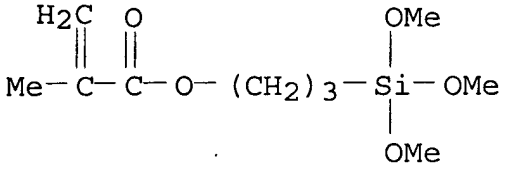
CM 1

CRN 3410-77-3
CMF C4 N4 O4 Si



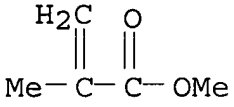
CM 2

CRN 2530-85-0
CMF C10 H20 O5 Si



CM 3

CRN 80-62-6
CMF C5 H8 O2



IC ICM C08L101-00
ICS B32B005-14; C08F230-00; C08K003-36; C09D005-00; C09D183-00; C09D201-00
CC 42-10 (Coatings, Inks, and Related Products)
IT **Coating materials**
(flexible; hybrid org.-inorg. materials with compositional gradient for crack-resistant flexible coatings)
IT **265311-47-5P** 362053-31-4P
(hybrid org.-inorg. materials with compositional gradient for crack-resistant flexible coatings)

L50 ANSWER 10 OF 24 HCAPLUS COPYRIGHT 2003 ACS
2001:305071 Document No. 135:78232 Next generation of aircraft coatings systems. Bierwagen, Gordon (North Dakota State University, USA). Journal of Coatings Technology, 73(915), 45-52 (English) 2001. CODEN: JCTEDL. ISSN: 0361-8773. Publisher: Federation of Societies for Coatings Technology.
AB A review, with .apprx.39 refs., on advanced coatings for aircraft. The current generation of aircraft coatings is based on polymer technologies of the 1970s and the use of chromate-based metal pretreatments and primers. Improvements in the epoxy and polyamide oligomers used in primers and isocyanates and flexible polyols used in topcoats, plus increases in solids contents have provided for min. compliance with environmental stds., but no truly new technologies were developed and applied to aircraft coatings since that time. Increasing economic and environmental factors and requirements of service lifetime of 30 yr are leading to developments in coating systems. Pretreatments and primers for high strength Al alloys, Al 2024 T-3 and Al 7075-T6 and for heat-treated metals that have phase-sepd. regions rich in reactive metals such as Cu, Mg, and Zn are outlined, including conductive polymers as primers without Cr-based metal pretreatments, sol-gel based

pretreatments and primers, plasma polymer metal pretreatments, and organo-modified aluminum oxide particles. These technologies show some promise for Cr replacement, but still have performance issues preventing immediate usage. For the topcoat system, fluorinated polyols and improved use of UV-absorbers and light stabilizers will be implemented, and ceramer and crosslinking systems will follow. The target for coatings systems is drastically improved wet adhesion based on covalently bonded systems with compn. gradient from metal to metal oxide to mixed metal oxide/org. polymer to high-performance UV-stable org. polymer. The materials costs for such a system may be quite high, but the maintenance cost savings will much more than offset these costs.

CC 42-0 (Coatings, Inks, and Related Products)

ST review metal coating aircraft adhesion durability; conductive polymer coating metal aircraft review; ceramer sol gel fluoropolymer coating metal aircraft review; oxide **metal polymer** concn **gradient** coating aircraft review

IT Aircraft
Ceramers
Coating materials
Conducting polymers
(aircraft coating systems based on ceramers and concn. gradient hybrid systems and conducting polymers)

L50 ANSWER 11 OF 24 HCAPLUS COPYRIGHT 2003 ACS

2001:235676 Document No. 134:267348 Composition-**graded** organic-inorganic hybrid materials, their manufacture, and their related products. Takami, Kazuyuki; Watabe, Toshiya; Hashimoto, Kazuhito; Fujishima, Akira (Ube Nitto Kasei Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001089679 A2 20010403, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-270098 19990924.

AB The materials comprise reaction products of (A) macromols. having metal-bearing groups and (B) plural hydrolyzable metal compds. with different hydrolysis reactivity, where the distribution of metal oxides in the reaction products and the compositional ratio of each metal in mixed metal oxides are **graded** in the thickness direction. The manufg. process comprise prepg. coatings contg. hydrolysis products of A and B, applying the coatings on org. substrates, and drying. Coatings, supports, antireflective layers, optical reflectors, and heat-ray reflectors comprising the materials are also claimed. Thus, a 2:1:1 (vol.%) mixt. of Me methacrylate-3-methacryloxypropyltrimethoxysilane copolymer, (EtO)4Si hydrolyzate, and (i-PrO)4Ti hydrolyzate was applied on a PET film, heated at 70.degree., immersed in 0.005N ammonia water to give an org.-inorg. hybrid film with the mentioned compn. **gradient**.

IT **331941-46-9P**
(manuf. of compn.-**graded** org.-inorg. hybrid materials comprising metal-alkoxide-copolymd. acrylic silsesquioxanes)

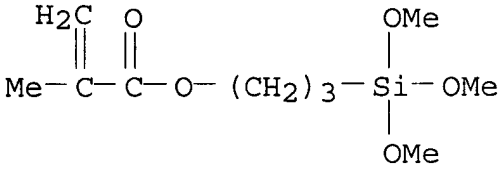
RN 331941-46-9 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 2-propanol titanium(4+) salt, silicic acid (H4SiO4) tetraethyl ester and

3-(trimethoxysilyl)propyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

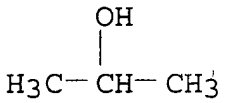
CM 1

CRN 2530-85-0
CMF C10 H20 O5 Si



CM 2

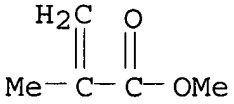
CRN 546-68-9
CMF C3 H8 O . 1/4 Ti



1/4 Ti(IV)

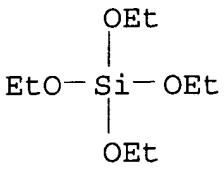
CM 3

CRN 80-62-6
CMF C5 H8 O2



CM 4

CRN 78-10-4
CMF C8 H20 O4 Si



IC ICM C08L101-16
ICS B32B007-02; C09D201-00
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 42, 73
ST acrylic silicate hybrid **coating** compn **graded**; titanium silicon alkoxide copolymd acrylic polymer; optical heat reflector org inorg hybrid
IT Silsesquioxanes
(acrylic-silicate-; manuf. of compn.-**graded** org.-inorg. hybrid materials comprising metal-alkoxide-copolymd. acrylic silsesquioxanes)
IT Optical materials
(antireflective; manuf. of compn.-**graded** org.-inorg. hybrid materials comprising metal-alkoxide-copolymd. acrylic silsesquioxanes)
IT Hybrid organic-inorganic materials
Optical reflectors
(manuf. of compn.-**graded** org.-inorg. hybrid materials comprising metal-alkoxide-copolymd. acrylic silsesquioxanes)
IT **Coating materials**
(org.-inorg. hybrid; manuf. of compn.-**graded** org.-inorg. hybrid materials comprising metal-alkoxide-copolymd. acrylic silsesquioxanes)
IT Heat
(reflectors; manuf. of compn.-**graded** org.-inorg. hybrid materials comprising metal-alkoxide-copolymd. acrylic silsesquioxanes)
IT Polyesters, uses
(substrates; manuf. of compn.-**graded** org.-inorg. hybrid materials comprising metal-alkoxide-copolymd. acrylic silsesquioxanes)
IT **331941-46-9P**
(manuf. of compn.-**graded** org.-inorg. hybrid materials comprising metal-alkoxide-copolymd. acrylic silsesquioxanes)
IT 25038-59-9, PET (polyester), uses
(substrates; manuf. of compn.-**graded** org.-inorg. hybrid materials comprising metal-alkoxide-copolymd. acrylic silsesquioxanes)

L50 ANSWER 12 OF 24 HCAPLUS COPYRIGHT 2003 ACS
2000:637653 Document No. 134:21405 Abrasion resistance in the Tumble test of sol-gel hybrid coatings for ophthalmic plastic lenses. Martinez Urreaga, J.; Matias, M. C.; Lorenzo, V.; de la Orden, M. U. (E.T.S.I. Industriales, Dept. Ingenieria Quimica Industrial y del Medio Ambiente, Universidad Politecnica de Madrid, Madrid, Spain).

Materials Letters, 45(6), 293-297 (English) 2000. CODEN: MLETDJ. ISSN: 0167-577X. Publisher: Elsevier Science B.V..

AB Hard abrasion-resistant coatings for ophthalmic plastics were obtained from mixts. of tetraethoxysilane, 3-methacryloxypropyltrimethoxysilane and Me methacrylate, and were cured at 120.degree.C and 140.degree.C for different times. The Tumble test was used to measure the abrasion resistance of these coated plastics. This abrasion resistance was strongly dependent on the curing time and temp. The IR anal. of the curing processes showed that, in order to achieve the highest abrasion resistance, these acrylic hybrid coatings must be fully polymd., but overcuring must be carefully avoided. Finally, a linear correlation was found between the abrasion resistance of these coated samples (as measured by the Tumble test) and their microhardness.

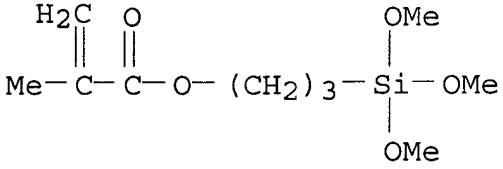
IT **149581-08-8**
(abrasion resistance in Tumble test of sol-gel hybrid coatings for ophthalmic plastic lenses)

RN 149581-08-8 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with silicic acid (H4SiO4) tetraethyl ester and 3-(trimethoxysilyl)propyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

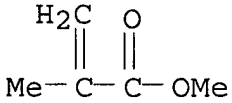
CM 1

CRN 2530-85-0
CMF C10 H20 O5 Si



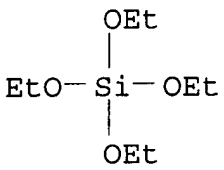
CM 2

CRN 80-62-6
CMF C5 H8 O2



CM 3

CRN 78-10-4
CMF C8 H20 O4 Si



CC 63-7 (Pharmaceuticals)
Section cross-reference(s): 37

IT **Coating materials**
(abrasion-resistant; abrasion resistance in Tumble test of sol-gel hybrid coatings for ophthalmic plastic lenses)

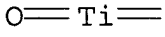
IT **149581-08-8**
(abrasion resistance in Tumble test of sol-gel hybrid coatings for ophthalmic plastic lenses)

L50 ANSWER 13 OF 24 HCAPLUS COPYRIGHT 2003 ACS
2000:278053 Document No. 132:309790 **Organic-inorganic composite graded** materials, method for preparation thereof and use thereof. Watanabe, Toshiya; Hashimoto, Kazuhito; Fujishima, Akira; Takami, Kazuyuki; Nakayama, Norihiro; Suzuki, Taro; Tanaka, Naoki; Tachibana, Eisuke; Adachi, Tatsuhiko (Ube Nitto Kasei Co., Ltd., Japan). PCT Int. Appl. WO 2000023523 A1 20000427, 81 pp. DESIGNATED STATES: W: AU, CN, IL, KR, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (Japanese). CODEN: PIXXD2. APPLICATION: WO 1999-JP5651 19991014. PRIORITY: JP 1998-301048 19981022; JP 1999-79446 19990324; JP 1999-264592 19990917.

AB The title materials comprise a composite formed by the chem. bonding of an org. polymer and a metallic compd. and have a compositionally **graded** structure wherein the content of the metallic compd. varies continuously along the direction of the depth from the surface of the materials. Thus, a soln. of Si(OEt)4 in HCl-isopropanol was added to a soln. of 3-methacryloyloxypropyltrimethoxysilane-Me methacrylate copolymer in acetone and EtOH, spin-coated on a PMMA substrate, and heated to give a film. A **TiO2** photocatalyst coating (STS 01) was applied on the film to give a weather-resistant coating.

IT **13463-67-7**, **Titanium oxide**, uses
(**org.-inorg. composite graded** materials for **coatings**)

RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



IT **149581-08-8P 164864-39-5P 265097-47-0P**
265097-48-1P 265311-46-4P 265311-47-5P

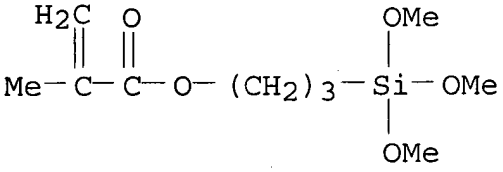
(**org.-inorg. composite graded** materials for **coatings**)

RN 149581-08-8 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with silicic acid (H4SiO4) tetraethyl ester and 3-(trimethoxysilyl)propyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

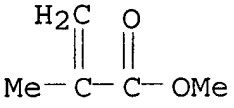
CM 1

CRN 2530-85-0
CMF C10 H20 O5 Si



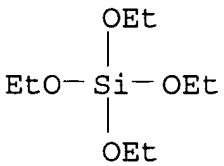
CM 2

CRN 80-62-6
CMF C5 H8 O2



CM 3

CRN 78-10-4
CMF C8 H20 O4 Si

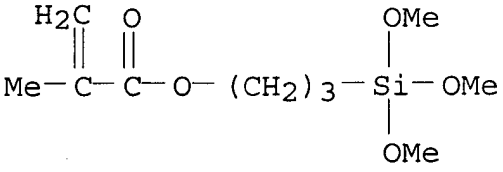


RN 164864-39-5 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 3-(trimethoxysilyl)propyl ester, polymer with ethenylbenzene and silicic acid (H4SiO4) tetraethyl ester (9CI) (CA INDEX NAME)

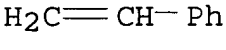
CM 1

CRN 2530-85-0
CMF C10 H20 O5 Si



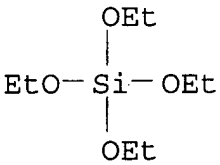
CM 2

CRN 100-42-5
CMF C8 H8



CM 3

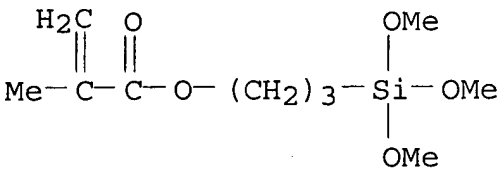
CRN 78-10-4
CMF C8 H20 O4 Si



RN 265097-47-0 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 2-propanol titanium(4+) salt and 3-(trimethoxysilyl)propyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

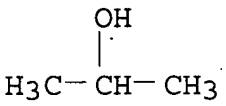
CM 1

CRN 2530-85-0
CMF C10 H20 O5 Si



CM 2

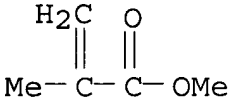
CRN 546-68-9
CMF C3 H8 O . 1/4 Ti



1/4 Ti(IV)

CM 3

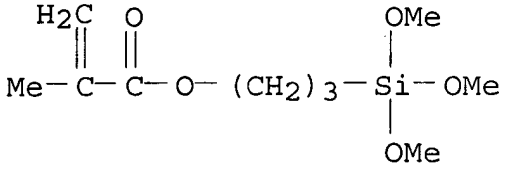
CRN 80-62-6
CMF C5 H8 O2



RN 265097-48-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with silicic acid (H4SiO4) tetraethyl ester, trimethoxymethylsilane and 3-(trimethoxysilyl)propyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

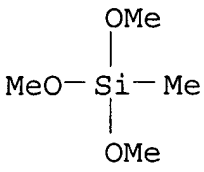
CM 1

CRN 2530-85-0
CMF C10 H20 O5 Si



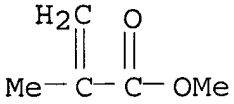
CM 2

CRN 1185-55-3
CMF C4 H12 O3 Si



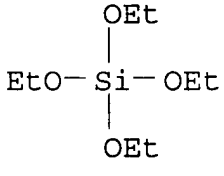
CM 3

CRN 80-62-6
CMF C5 H8 O2



CM 4

CRN 78-10-4
CMF C8 H20 O4 Si



RN 265311-46-4 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with Orgatix SI 400 and 3-(trimethoxysilyl)propyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

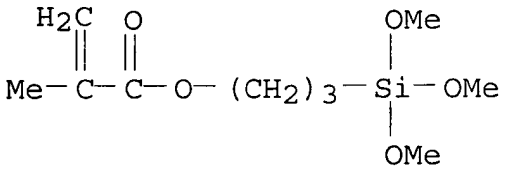
CM 1

CRN 264133-42-8
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

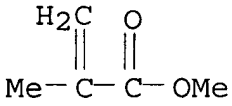
CM 2

CRN 2530-85-0
CMF C10 H20 O5 Si



CM 3

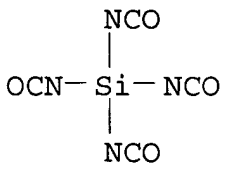
CRN 80-62-6
CMF C5 H8 O2



RN 265311-47-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with tetraisocyanatosilane and 3-(trimethoxysilyl)propyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

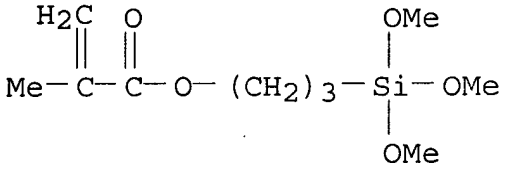
CM 1

CRN 3410-77-3
CMF C4 N4 O4 Si



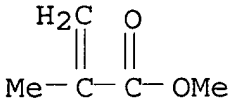
CM 2

CRN 2530-85-0
CMF C10 H20 O5 Si



CM 3

CRN 80-62-6
CMF C5 H8 O2



IC ICM C08L101-00
ICS C09D201-00; C08F008-42
CC 42-10 (Coatings, Inks, and Related Products)
Section cross-reference(s): 74, 76
ST **org inorg composite graded coating**; methacryloyloxypropyltrimethoxysilane MMA tetraethoxysilane copolymer coating; **titanium oxide** photocatalyst coating
IT **Coating materials**
(elec. conductive; **org.-inorg. composite graded** materials for conductive **coatings**)
IT Magnetic **recording** materials
(optical; **org.-inorg. composite graded** materials for magnetic **recording** materials)
IT Automobiles
Paints
(**org.-inorg. composite graded** materials for automobile paints)
IT Hybrid **organic-inorganic** materials
Primers (paints)
(**org.-inorg. composite graded** materials for **coatings**)
IT **Coating materials**
(**org.-inorg. composite**

graded materials for magnetic **recording** materials)

IT Silazanes
(perhydro, L 110; **org.-inorg. composite graded** materials for **coatings**)

IT **Coating materials**
(weather-resistant; **org.-inorg. composite graded** materials for **coatings**)

IT **13463-67-7, Titanium oxide**, uses
(**org.-inorg. composite graded** materials for **coatings**)

IT **149581-08-8P 164864-39-5P 265097-47-0P 265097-48-1P 265311-46-4P 265311-47-5P**
(**org.-inorg. composite graded** materials for **coatings**)

IT 50926-11-9, ITO
(**org.-inorg. composite graded** materials for conductive **coatings**)

L50 ANSWER 14 OF 24 HCAPLUS COPYRIGHT 2003 ACS

1998:257296 Document No. 129:41905 Ion implantation protects surfaces. Kleiman, Jacob; Iskanderova, Zelina; Tennyson, Roderick C. (Integrity Testing Lab. Inc., USA). Advanced Materials & Processes, 153(4), 26-30 (English) 1998. CODEN: AMAPEX. ISSN: 0882-7958. Publisher: ASM International.

AB The Implantox process is based on irradn. with high doses of low or medium energy ions of selected metals or metalloids which are implanted onto advanced polymers and carbon-based composites to enhance resistance to erosion and oxidn. If required, this step may be followed by implantation of hardening elements. A second step is carried out in an oxidative environment and involves exposure to fast at. O; the processes produce protective oxide-based layers 50-100 nm thick and produce carbonization of the surface forming a carbonized (graphitized) phase. The ion implantation coatings are preferred to conventional org. coatings, esp. for spacecraft in low earth orbit. The process is illustrated with examples of implantation of Kapton, PEEK, Mylar, and Graphite implanted with ions of C, O, Si, Al and other metals. The process is suitable for prodn. of **graded metal** structures on **polymer** films, that can be useful as sensors.

CC 38-1 (Plastics Fabrication and Uses)
Section cross-reference(s): 57, 76

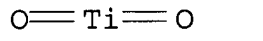
IT **Coating materials**
(abrasion-resistant; ion implantation to form superior protective coatings on polymer and carbon composite surfaces for use in spacecraft)

IT **Coating materials**
(oxidn.-resistant; ion implantation to form superior protective coatings on polymer and carbon composite surfaces for use in spacecraft)

L50 ANSWER 15 OF 24 HCAPLUS COPYRIGHT 2003 ACS
1997:453898 Document No. 127:67061 Reclamation of polyolefins by adding activated filler into modified recycled polyolefins. Boulgakov, Viktor; Pikous, Eugeni; Djavakhichvili, Gueorguie (Pheniplastics S.A., Liechtenstein). Eur. Pat. Appl. EP 776930 A1 19970604, 7 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE. (English). CODEN: EPXXDW. APPLICATION: EP 1995-810742 19951129.

AB Polyolefins are reclaimed by thermochem. modifying of recycled polyolefins, which are preliminarily disintegrated and washed to remove contaminants, in liq. polyorganosiloxane, drying and granulating with an inert filler activated by radical-forming silanes, showing better mech. properties (such as tensile strength, elongation and softening point) than primary (std.-**grade**) polyolefins, and useful for pipes, motor-vehicle bumpers and storage-battery containers. Thus, a pretreated recycled polypropylene was mixed with polyethylsiloxane at 125.degree. for 2 h, dried, then extruded at 160-180.degree. and 200 kg/cm2 with 30% perlite activated by phenylaminomethylmethyldiethoxysilane, and granulated at 180-220.degree., showing ultimate tensile strength 37 MPa, ultimate elongation 600% and vicat's softening point (5 kg load) 120.degree..

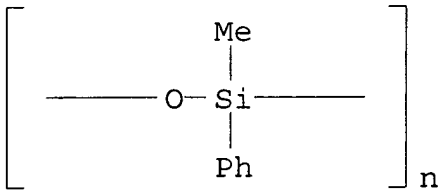
IT **13463-67-7, Titanium oxide (TiO2)**, uses
(filler, activated by diphenylsilanediol; reclamation of polyolefins by adding activated filler into modified recycled polyolefins)
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



IT **191474-20-1P 191474-22-3P 191474-24-5P**
(reclamation of polyolefins by adding activated filler into modified recycled polyolefins)
RN 191474-20-1 HCAPLUS
CN Poly[oxy(methylphenylsilylene)], polymer with 1-propene, graft (9CI) (CA INDEX NAME)

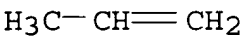
CM 1

CRN 9005-12-3
CMF (C7 H8 O Si)n
CCI PMS



CM 2

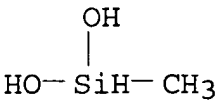
CRN 115-07-1
CMF C3 H6



RN 191474-22-3 HCAPLUS
CN Silanediol, methyl-, polymer with 1-propene, graft (9CI) (CA INDEX NAME)

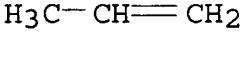
CM 1

CRN 43641-90-3
CMF C H6 O2 Si



CM 2

CRN 115-07-1
CMF C3 H6

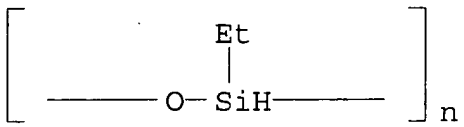


RN 191474-24-5 HCAPLUS
CN Poly[oxy(ethylsilylene)], polymer with ethene, graft (9CI) (CA INDEX NAME)

CM 1

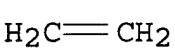
CRN 24979-95-1
CMF (C2 H6 O Si)n

CCI PMS



CM 2

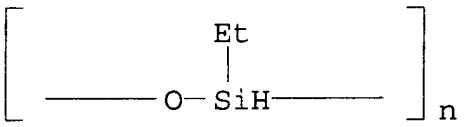
CRN 74-85-1
CMF C2 H4



IT **191474-18-7P**
(recycled; reclamation of polyolefins by adding activated filler into modified recycled polyolefins)
RN 191474-18-7 HCAPLUS
CN Poly[oxy(ethylsilylene)], polymer with 1-propene, graft (9CI) (CA INDEX NAME)

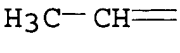
CM 1

CRN 24979-95-1
CMF (C2 H6 O Si)n
CCI PMS



CM 2

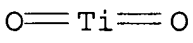
CRN 115-07-1
CMF C3 H6



IC ICM C08J011-04
ICS C08G081-02; C08L023-02
ICI C08L023-02, C08L083-04

CC **38-3** (Plastics Fabrication and Uses)
Section cross-reference(s): 60
IT **13463-67-7**, **Titanium oxide (TiO2)**, uses 14807-96-6, Talc, uses
(filler, activated by diphenylsilanediol; reclamation of polyolefins by adding activated filler into modified recycled polyolefins)
IT **191474-20-1P 191474-22-3P 191474-24-5P**
(reclamation of polyolefins by adding activated filler into modified recycled polyolefins)
IT **191474-18-7P**
(recycled; reclamation of polyolefins by adding activated filler into modified recycled polyolefins)

L50 ANSWER 16 OF 24 HCAPLUS COPYRIGHT 2003 ACS
1997:361121 Document No. 127:18488 Manufacture methods for metal oxide/polymer composites with oxide gradient with good heat resistance, mech. properties, and adhesion. Haraguchi, Kazutoshi; Murata, Kazutaka; Ono, Yoshiuki (Dainippon Ink and Chemicals, Inc., Japan). Jpn. Kokai Tokkyo Koho JP 09087526 A2 19970331 Heisei, 24 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-314030 19951201. PRIORITY: JP 1995-179983 19950717.
AB Title polymers are .gtoreq.1 polymers from polyamides, polyolefins, polyesters, PVC, acrylic resins, polyethylene copolymers, thermoplastic elastomers, polyacetal, fluoropolymers. The oxide gradient (with local ratio .gtoreq.1.5 of the max. to the min. and continuously changed diam.) was produced by impregnation of polymers in (aq.)solns. of alkoxides before uniformly distribution of the alkoxides, removal of partial alkoxides from the polymer, impregnation of the alkoxide-contg. polymer in (aq.) soln. contg. water/catalysts (basic or acidic) and solvents which can swell the polymer, followed by polymn. of alkoxides in vapor phase of the catalysts. Thus, nylon 6 (Ube nylon 1022B) was impregnated with MeOH/water soln. at 80.degree. for 3 h to increase wt. by 3% and then with tetramethoxysilane at 30.degree. for 5 h; the impregnated sample was dried at room temp. for 5 h and then at 80.degree. at vacuum for 24 h to give a nylon-silica composite with rapid decrease in silica concn. at distance 70-80 .mu.m from the surface, max. concn. 13% and min. concn. 0 at 20 .mu.m from the surface, and uniformly distributed particles with diam. 10-30 .mu.m.
IT **13463-67-7**, **Titania**, uses
(manuf. methods for metal oxide/polymer composites with oxide gradient with good heat resistance, mech. properties, and adhesion)
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



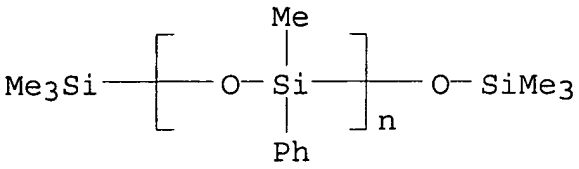
IC ICM C08L085-00

ICS C08L101-00
CC 37-6 (Plastics Manufacture and Processing)
Section cross-reference(s): 40, 76
ST **metal** oxide **gradient polymer** composite manuf; polyamide metal alkoxide gradient composite; polyester alkoxide gradient composite; acrylic resin alkoxide gradient composite; polyacetal alkoxide gradient composite; PVC alkoxide gradient composite heat resistance; ethylene copolymer alkoxide gradient composite; thermoplastic elastomer alkoxide gradient composite; fluoropolymer alkoxide gradient composite adhesion; tetramethoxysilane polymer gradient composite mech; silica nylon 6 gradient composite
IT 1332-29-2, Tin oxide 1344-28-1, Alumina, uses 7631-86-9, Silica, uses **13463-67-7**, **Titania**, uses
(manuf. methods for metal oxide/polymer composites with oxide gradient with good heat resistance, mech. properties, and adhesion)

L50 ANSWER 17 OF 24 HCAPLUS COPYRIGHT 2003 ACS
1996:123983 Document No. 124:292051 Silicone rubber compositions for seals. Kawasaki, Hiroshi (Arai Pump Mfg, Japan). Jpn. Kokai Tokkyo Koho JP 07310069 A2 19951128 Heisei, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1994-103845 19940518.
AB The compns., useful for sealing automobile engine oils, comprise organopolysiloxane rubbers and Ph silicone oils. Thus, a compn. comprising SH 430 Gum (silicone rubber) 100, SH 510 3, Celite 270 (diatomaceous earth) 20, Kyowamag 30 3, Carplex CS 5 20, RC 4 [50% paste of 2,5-dimethyl-2,5-di(tert-butylperoxy)hexane] 0.7, and Bayferrox 130M 0.5 part was kneaded and vulcanized to give a test piece showing JIS-A hardness 74 initially and 64 after immersion in an SD-**grade** engine oil, vol. change after the immersion +13.8%, tensile strength 7.3 MPa, elongation 180%, 100% stress 4.2 MPa, and compression set 18% (150.degree., 70 h).
IT **13463-67-7**, **Titanium oxide**, uses
(in silicone rubbers contg. Ph silicone oils for oil seals)
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)

O═Ti═O

IT **42557-11-9**, SH 510
(silicone rubbers contg. Ph silicone oils for oil seals)
RN 42557-11-9 HCAPLUS
CN Poly[oxy(methylphenylsilylene)], .alpha.-(trimethylsilyl)-.omega.-[(trimethylsilyl)oxy]- (9CI) (CA INDEX NAME)



IC ICM C09K003-10
ICS C08K003-00; C08K005-14; C08L083-04; H01L023-29; H01L023-31
CC 39-15 (Synthetic Elastomers and Natural Rubber)
Section cross-reference(s): **38**
IT 1309-37-1, Bayferrox 130M, uses 1309-48-4, Kyowamag 30, uses 1317-33-5, Molybdenum disulfide, uses 1317-61-9, Iron oxide (fe3o4), uses 1344-28-1, Alumina, uses 7440-66-6D, Zinc, oxides or carbonates 7631-86-9, Carplex CS 5, uses 7782-42-5, Graphite, uses 9002-84-0, PTFE 11118-57-3, Chromium oxide 11129-18-3, Cerium oxide **13463-67-7**, **Titanium oxide**
, uses
(in silicone rubbers contg. Ph silicone oils for oil seals)
IT **42557-11-9**, SH 510
(silicone rubbers contg. Ph silicone oils for oil seals)

L50 ANSWER 18 OF 24 HCAPLUS COPYRIGHT 2003 ACS
1994:273160 Document No. 120:273160 Evaluation of zinc-epoxy coatings under gradient temperature. Harada, Fumio; Kondou, Takeshi; Mimori, Shigehiro (Tohoku Electr. Power Co., Inc., Sendai, 980, Japan). Bosei Kanri, 38(3), 87-93 (Japanese) 1994. CODEN: BOKAAP. ISSN: 0520-6340.
AB Deterioration of Zn-epoxy coatings in contact with pure water under gradient temp. change was investigated to provide data for the evaluation. Specimens comprising Zn-rich paint undercoatings, epoxy resin intermediates, and top coatings on SS 400 plates were kept on 1 side in contact with water at 40.degree. while the other side was at 20.degree. for 80 days. Blistering was obsd. between the undercoatings and intermediates after 20-30 days and cracks in undercoatings also appeared. Permeation of water through coatings was nearly proportional to the period of time in water. It was concluded that elec. impedance of coatings, which started to decrease in 20-30 days and further decreased with increasing of blisters, was most suitable for the evaluation.
CC 42-10 (Coatings, Inks, and Related Products)
Section cross-reference(s): 55, 76
IT **Coating materials**
(zinc-rich epoxy resins, evaluation of deterioration in contact with water under temp. gradient of)
IT 7732-18-5, Water, uses
(deterioration of zinc-rich epoxy **resin** coatings on **metal** plates under temp. **gradient** in contact with)

L50 ANSWER 19 OF 24 HCAPLUS COPYRIGHT 2003 ACS

1993:519619 Document No. 119:119619 Thermosetting acrylic coating materials and coating process. Yoshida, Osamu (Tosoh Corp, Japan). Jpn. Kokai Tokkyo Koho JP 05078614 A2 19930330 Heisei, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1991-270557 19910924.

AB The title materials are obtained by dissolving mixts. contg. 1-60% radically polymd. copolymers with no.-av. mol. wt. 50,000-300,000 (polystyrene basis) contg. units [CH2C(CO2R)R]m[CH2C[CO2(CH2)lSi(OR')3]R]n [R = H, C1-5 alkyl; R' = C1-5 alkyl; l = 1-3; m/n = 99/1-80/20 (mol ratio)] and 40-99% R1nM(OR2)4-n (R1 = H, C1-5 alkoxy, phenoxy, C1-5 alkyl, Ph; R2 = C1-5 alkyl, Ph; M = Si, Ti, Sn, Zr; n = 1-4) and/or (R3O)2M'(Acac) (M' = Ti, Sn, Zr; R3 = C1-5 alkyl; Acac = acetylacetonate) in org. solvents and adding Lewis acids to them and are applied on substrates and heat-cured to form transparent high-hardness coatings of (meth)acrylic polymers contg. crosslinked Si groups in the side chains with crosslinking degree .gtoreq.70%, in which the crosslinking points are composed of .gtoreq.1 metal-O bond with content of the metals .gtoreq.15% (based on the coating). Thus, 8.56 g Me methacrylate was polymd. with 1.12 g 3-methacryloxypropyltrimethoxysilane at 70.degree. for 6 h in diglyme in the presence of AIBN, blended with 50.34 g (EtO)4Si and 0.1 N HCl, applied on a PMMA plate, and cured at 130.degree. for 1 h to form a coating with good transparency and high hardness.

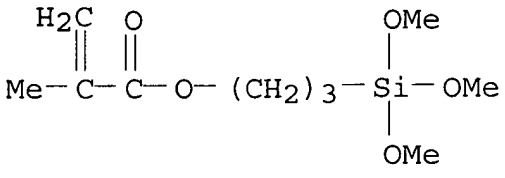
IT **149581-08-8P**
(prepn. of crosslinked, for coatings with good transparency and hardness)

RN 149581-08-8 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with silicic acid (H4SiO4) tetraethyl ester and 3-(trimethoxysilyl)propyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

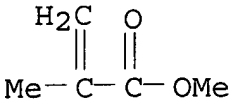
CM 1

CRN 2530-85-0
CMF C10 H20 O5 Si



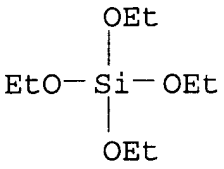
CM 2

CRN 80-62-6
CMF C5 H8 O2



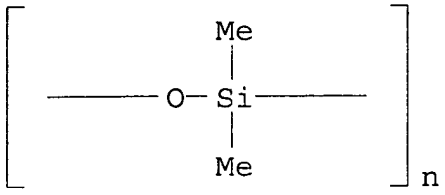
CM 3

CRN 78-10-4
CMF C8 H20 O4 Si

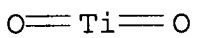


IC ICM C09D133-06
ICS C09D133-06; C09D143-04
CC 42-7 (Coatings, Inks, and Related Products)
IT **Coating materials**
(transparent, alkoxysilyl-contg. acrylic polymers crosslinked with metals as, with high hardness)
IT **149581-08-8P** 149581-09-9P 149581-10-2P 149581-11-3P
149581-12-4P 149581-13-5P 149610-91-3P 149634-90-2P
(prepn. of crosslinked, for coatings with good transparency and hardness)

L50 ANSWER 20 OF 24 HCAPLUS COPYRIGHT 2003 ACS
1993:157406 Document No. 118:157406 Step-**gradient** anti-iridescent **coatings**. Proscia, James W. (Ford Motor Co., USA). U.S. US 5168003 A 19921201, 9 pp. (English). CODEN: USXXAM. APPLICATION: US 1991-720114 19910624.
AB Glazing articles are described which are provided with multizone anti-iridescence structures on the surface of a transparent substrate beneath an optically functional layer; the anti-iridescence structures comprise a high-n zone on the substrate surface and 1st and 2nd step-**gradient** zones on the high-n zone, the 1st (middle) step zone having n lower than that of both the high-n and 2nd step-**gradient** zones.
IT **9016-00-6**, Poly[oxy(dimethylsilylene)] **13463-67-7**, **Titanium dioxide**, uses
(anti-iridescence structures contg., on glazing articles)
RN 9016-00-6 HCAPLUS
CN Poly[oxy(dimethylsilylene)] (8CI, 9CI) (CA INDEX NAME)



RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



IC ICM B32B017-06
NCL 428216000
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
ST glazing article step **gradient** antiiridescence structure
IT Windows
(anti-iridescence structures for, step-**gradient**)
IT Optical materials
(anti-iridescence structures, step-**gradient**)
IT 1306-38-3, Cerium dioxide, uses 1312-43-2, Indium oxide (In2O3) 1313-96-8, Niobium oxide (Nb2O5) 1314-13-2, Zinc monoxide, uses 1314-23-4, Zirconium dioxide, uses 1314-35-8, Tungsten trioxide, uses 1314-61-0, Tantalum oxide (Ta2O5) 1314-62-1, Vanadium oxide (V2O5), uses 1314-98-3, Zinc sulfide, uses 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 7783-40-6, Magnesium difluoride **9016-00-6**, Poly[oxy(dimethylsilylene)] 12033-89-5, Silicon nitride, uses **13463-67-7**, **Titanium dioxide**, uses 13775-53-6 18282-10-5, Tin dioxide 113443-18-8, Silicon monoxide
(anti-iridescence structures contg., on glazing articles)

L50 ANSWER 21 OF 24 HCAPLUS COPYRIGHT 2003 ACS
1986:415383 Document No. 105:15383 Thermal-transfer **recording** materials. Tanaka, Tsuneo; Nakajima, Kazuhiro; Yoshitomi, Tetsuro; Hikosaka, Michitsugu (Toyo Ink Mfg. Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 61031289 A2 19860213 Showa, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1984-152078 19840724.
AB In the title materials consisting of a support, a dye layer, and a thermal-transfer layer on the dye layer, the dye layer contains a dye that forms complexes with metals or metal compds. and that is transferred by diffusion or by sublimation and the transfer layer contains a wax or polymer binder that melts or softens by heating and dispersed metal compds. that form complexes with the dye in the dye layer. The materials provide images with gradation using low energy for **recording**. Thus, polyester film was coated in stripes with yellow, magenta and purple layers contg. C.I. Acid

Brown 29, C.I. Disperse Red 4, and C.I. Disperse Blue 24, resp., with CM-cellulose as binder. The sheet was further coated with a compn. contg. 90 parts of 20% dispersion of carnauba wax in toluene and 10 parts of Al stearate, to form 4.5 g/m2 layer. The material gave graded image d. in thermal printing but a control material contg. wax binder did not.

IC ICM B41M005-26
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
ST thermal transfer **recording** graded image; **recording** material thermal double layer; metal complex dye **recording** material
IT **Recording** materials
(thermal-transfer, contg. dye forming complexes with metals and polymer binder contg. dispersed metal compds.)
IT 2379-90-0 2475-46-9 2872-48-2 3179-96-2 50497-83-1 52256-37-8
(thermal-transfer **recording** material with dye layer contg., and transfer layer contg. **polymer** binder contg. dispersed **metal** compds., for **graded** image)
IT 9004-32-4 9004-57-3
(thermal-transfer **recording** material with transfer layer contg. binder from, with dispersed metal compds.)

L50 ANSWER 22 OF 24 HCAPLUS COPYRIGHT 2003 ACS
1985:222225 Document No. 102:222225 Corrosion-resistant coatings for core plates. Perfetti, Bruno M. (United States Steel Corp. , USA). U.S. US 4507360 A 19850326, 3 pp. Division of U.S. Ser. No. 541,613. (English). CODEN: USXXAM. APPLICATION: US 1984-584978 19840301. PRIORITY: US 1983-541613 19831013.

AB Anticorrosive coatings for elec. or magnetic steels for magnetic cores of transformers, motors, etc. contain quaternary ammonium silicates, polymers of C2H4 with vinyl acetate or acrylic compds., and small amts. of BaCrO4, SrCO4, or PbCrO4. Thus, a mixt. of (HOCH2CH2)3NMe+ silicate [12687-85-3] (Quram 220) 200, 37.6% Na silicate soln. 45, 45% aq. dispersion of 70-80:20:30 ethylene-vinyl acetate copolymer [24937-78-8] (Latiseal A7922) 53, 22% aq. 20:80 acrylic acid-ethylene copolymer [9010-77-9] (Adcote 37F1) 95, ethanolamine 5, surfactants (Tamol 731-25, Triton X1114, and Surfynol 104) 0.25 each, lard oil 5, mineral oil 7.5, and kaolin 100 parts contg. 5% SrCO4 had gel time time >60 days (compared with 5 min with MgCrO4 in place of SrCO4), and elec. sheet steel coated with 0.1 mil this compn. showed <5% rust coverage after 21 days over H2O at room temp.

IC ICM B32B015-08
NCL 428336000
CC 42-5 (Coatings, Inks, and Related Products)
Section cross-reference(s): 55
ST anticorrosive **coating magnetic** steel; strontium chromate coating anticorrosive; ethylene copolymer coating anticorrosive; acrylic acid copolymer coating; vinyl acetate copolymer coating; quaternary ammonium silicate coating

IT **Coating materials**
(anticorrosive, ethylene **polymers**-quaternary ammonium silicates-**metal** chromates, for elec.-**grade** steel)

L50 ANSWER 23 OF 24 HCAPLUS COPYRIGHT 2003 ACS
1983:530160 Document No. 99:130160 Graded polymeric coatings or films. Liepins, Raimond (United States Dept. of Energy, USA). U.S. US 4390567 A 19830628, 6 pp. (English). CODEN: USXXAM. APPLICATION: US 1981-242807 19810311.
AB A method is described of forming metal-loaded polymeric coatings having a through-the-thickness gradient of at. no. (or concn. of the metal) and d. The method comprises application of a polymer to a substrate, followed by its exposure at <150.degree. to a metal compd.-contg. fluid or gas for a time sufficient for the metal compds., such as metal resinates, to sorb and diffuse into the coating. Thus, glass microballoons were coated with 28 .mu.-thick layer of polycyclooctatetraene [30374-82-4] in a low-pressure plasma system, conditioned in p-xylene at room temp. for 48 h, dipped for 15 min in an Au resinate soln., and dried for .apprx.18 h at room temp. and 50.degree. to give a coating contg. 11% Au penetrated to a depth of 5-6 .mu. in a decreasing concn. gradient. Such coatings, also produced with mixts. of metal resinates, can be used in the fabrication of advanced inertial confinement fusion targets, when applied on glass microballons contg. the D-T fuel mixt. The same coatings, when treated with low-pressure plasma after loading with metal compds., can give a metal finish.
IC B05D007-24; C23C011-00
NCL 427214000
CC 71-1 (Nuclear Technology)
Section cross-reference(s): 42, 56
ST **metal** concn **gradient polymeric** coating; inertial confinement fusion target coating; plasma metalization polymeric coating
IT **Coating materials**
(polymers, for metalization and prepn. of nuclear targets by metal sorption)
IT **Coating process**
(with metals by sorption on polymer-coated substrates in concn. gradients)
IT **Coating process**
(metalization, by metal sorption on polymer-coated substrates and plasma-treatment)
IT **Coating process**
(plasma, in metalization and prepn. of nuclear targets by metal sorption on polymer-coated substrate)

L50 ANSWER 24 OF 24 HCAPLUS COPYRIGHT 2003 ACS
1974:479492 Document No. 81:79492 Electrophoretic production of metal polymer coatings. Vovnenko, A. M.; Deinega, Yu. F.; Vlasyuk, N. V.; Bushin, V. V.; Ostapenko, Yu. V.; Tkachuk, T. P. (Institute of Colloidal and Water Chemistry, Academy of Sciences, Ukrainian

S.S.R.). U.S.S.R. SU 396435 19730829 From: Otkrytiya, Izobret., Prom. Obraztsy, Tovarnye Znaki 1973, 50(36), 61-2. (Russian). CODEN: URXXAF. APPLICATION: SU 1971-1682882 19710726.

AB High **grade** ferromagnetic nonconducting **metal** -contg. **polymer** electrophoretic coatings, contg. .geq.40% epoxy resin, were obtained from an epoxy-based metal-filled polymer suspension in an org. solvent in the presence of dialkyl hydrogen dithiophosphate charging agent, with subsequent heat treatment of the coating. Thus, a 5-15% suspension of polymer prepd. from iron carbonyl [37220-42-1] and epoxy resin was used in liq. satd. hydrocarbons with 0.3-1.0% charging agent, based on the solid phase wt., and the process was carried out at an elec. field voltage of 250-300V/cm at 18-25.deg..

IC C23B

CC 42-8 (Coatings, Inks, and Related Products)

IT **Coating process**
(electrophoretic, with metal-contg. epoxy resins)

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L51 ANSWER 1 OF 10 HCAPLUS COPYRIGHT 2003 ACS

2003:150112 Document No. 138:209072 Manufacture of metal oxide type membranes and **organic-inorganic composite gradient** materials by sol-gel process. Tanaka, Naoki; Nishikawa, Ryozo; Nakayama, Tsunehiro (Ube Nitto Kasei Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2003054950 A2 20030226, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-252952 20010823.

AB The metal oxide-type membranes are manufd. by: hydrolyzing a metal-contg. compd. having the formula of R1nM1R2m-n (R1 is a nonhydrolyzable radical, R2 is a hydrolyzable radical, M1 is a metal at., m is the valency of M1, and n satisfies: 0.ltoreq.n<m-1) by using 0.25-0.75 time mol of water to form a sol, coating on a substrate to form a membrane, moisturizing at 40-100.degree. with an abs. humidity .gtoreq.0.02 kg/kgD.A. and relative humidity .ltoreq.80% RH, and heating at 40-200.degree. under pressure of .ltoreq.5 kPa with a total treatment time of .ltoreq.30 min. Preferably, the hydrolyzable compd. is an Ti alkoxide expressed as TiR24. The composite gradient materials are manufd. by coating the sol on an org. substrate, moisturing, and heat treating.

IT **13463-67-7P, Titania**, preparation
(membranes; manuf. of metal oxide type membranes and **org.-inorg. composite gradient** materials by sol-gel process)

RN 13463-67-7 HCAPLUS

CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)

O=Ti=O

IC ICM C01G023-04
ICS C01G001-02; C08F230-04; C09D157-06; C09D185-00; C09D201-02; C09D183-02; C09D183-04
CC 57-2 (Ceramics)
Section cross-reference(s): 38
ST membrane **org inorg composite gradient** material sol gel
IT Sol-gel processing
(coating; manuf. of metal oxide type membranes and **org.-inorg. composite gradient** materials by sol-gel process)
IT Composites
Membranes, nonbiological
(manuf. of metal oxide type membranes and **org.-inorg. composite gradient** materials by sol-gel process)
IT **Coating process**
(sol-gel; manuf. of metal oxide type membranes and **org.-inorg. composite gradient** materials by sol-gel process)
IT 7631-86-9P, Silica, preparation **13463-67-7P**, **Titania**, preparation
(membranes; manuf. of metal oxide type membranes and **org.-inorg. composite gradient** materials by sol-gel process)
IT 78-10-4, Tetraethoxysilane 546-68-9, Titanium tetraisopropoxide
(sol contg.; manuf. of metal oxide type membranes and **org.-inorg. composite gradient** materials by sol-gel process)
IT 25610-19-9, Polyethylenephthalate
(substrate; manuf. of metal oxide type membranes and **org.-inorg. composite gradient** materials by sol-gel process)
IT 7440-21-3, Silicon, uses
(waver, substrate; manuf. of metal oxide type membranes and **org.-inorg. composite gradient** materials by sol-gel process)

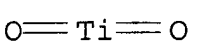
L51 ANSWER 2 OF 10 HCAPLUS COPYRIGHT 2003 ACS
2003:147845 Document No. 138:209070 Manufacture of **titania** membranes and organic-inorganic gradient materials by sol-gel process. Koike, Tadashi; Tanaka, Naoki; Nishikawa, Ryozo; Nakayama, Norihiro; Tachibana, Eisuke; Kobayashi, Akihiro (Ube Nitto Kasei Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2003054951 A2 20030226, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-252959 20010823.
AB The **TiO2** membranes are manufd. by: forming a sol having light scattering intensity 8000-300000 cps from a mixt. contg. Ti tetraalkoxide, an alc., water and an acidic catalyst, coating the sol on a substrate, humidifying at 40-100.degree. with an abs. humidity of .gtoreq.0.02 kg/kgD.A. and relative humidity .ltoreq.80%RH, and heating at 40-200.degree. under abs. humidity

<0.02 kg/kgD.A. Preferably, the substrate is made of polyethyleneterephthalate film. The composite gradient materials are manufd. by: coating the sol on an org. substrate, humidifying, and heating.

IT **13463-67-7P, Titania**, preparation
(manuf. of **titania** membranes and org.-inorg. gradient materials by sol-gel process)

RN 13463-67-7 HCAPLUS

CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



IC ICM C01G023-04
ICS C09D001-00; C09D185-00; C09D201-02

CC 57-2 (Ceramics)
Section cross-reference(s): 38

ST **titania** membrane org inorg gradient material sol gel

IT Sol-gel processing
(coating; manuf. of **titania** membranes and org.-inorg. gradient materials by sol-gel process)

IT **Composites**
Membranes, nonbiological
(manuf. of **titania** membranes and **org.-inorg. gradient** materials by sol-gel process)

IT Light scattering
(sol with desired; manuf. of **titania** membranes and org.-inorg. gradient materials by sol-gel process)

IT **Coating process**
(sol-gel; manuf. of **titania** membranes and org.-inorg. gradient materials by sol-gel process)

IT Polyesters, uses
(substrate; manuf. of **titania** membranes and org.-inorg. gradient materials by sol-gel process)

IT **13463-67-7P, Titania**, preparation
(manuf. of **titania** membranes and org.-inorg. gradient materials by sol-gel process)

IT 7697-37-2, Nitric acid, uses
(sol contg.; manuf. of **titania** membranes and org.-inorg. gradient materials by sol-gel process)

IT 78-67-1, 2,2'-Azobisisobutyronitrile 80-62-6, Methylmethacrylate 108-10-1, Methylisobutylketone 110-80-5, Ethyl cellosolve 546-68-9, Titanium tetraisopropoxide 2530-85-0, .gamma.-Methacryloxypropyltrimethoxysilane 9003-53-6
(sol contg.; manuf. of **titania** membranes and org.-inorg. gradient materials by sol-gel process)

IT 25038-59-9, Polyethyleneterephthalate, uses
(substrate; manuf. of **titania** membranes and org.-inorg. gradient materials by sol-gel process)

L51 ANSWER 3 OF 10 HCAPLUS COPYRIGHT 2003 ACS

2001:837056 Document No. 135:373084 Hybrid organic-inorganic composition for coating formation with inorganic gradient distribution along thickness direction. Takami, Kazuyuki; Tanaka, Naoki; Nishikawa, Kazuzo; Nakayama, Tsunehiro (Ube Nitto Kasei Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001316635 A2 20011116, 21 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-169732 20000428.

AB Title coating compn. is prepd. from (A) composites chem. bonded from polymer compds. (e.g., 3-methacryloxypropyltrimethoxysilane-Me methacrylate copolymer) and metal oxides (e.g., hydrolyzate from tetramethoxysilane), and (B) solvents mixed from both (a) good and (b) poor solvents for the polymer compds. (e.g., methylethylketone/1-butanol = 50/50), wherein (b) is less easy to be dried than (a) and has lower steam pressure at 20.degree. than water does.

IC ICM C09D201-00
ICS C09D005-00; C09D183-00; C09D185-00

CC 42-10 (Coatings, Inks, and Related Products)

ST solvent **org inorg** hybrid **composite** **gradient** coating

IT **Coating materials**
Hybrid organic-inorganic materials
Solvents
(prepn. of hybrid org.-inorg. compn. for coating formation with inorg. gradient distribution along thickness direction)

L51 ANSWER 4 OF 10 HCAPLUS COPYRIGHT 2003 ACS

2001:805336 Document No. 135:359196 Organic-inorganic composite materials for coatings with excellent adhesion property. Nishikawa, Ryozo; Hidaka, Akira; Koike, Tadashi; Nakayama, Tsunehiro (Ube Nitto Kasei Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001310943 A2 20011106, 13 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-28310 20010205. PRIORITY: JP 2000-43986 20000222.

AB The composite materials comprise org. polymers chem. bonded with metal oxides, wherein the materials show a compn. gradient in the depth direction. The org. polymers are prepd. by copolymn. of unsatd. monomers having metal-contg. groups hydrolytically reactive with metal oxides, CH2:CR1CO2R2 (R1 = H, Me; R2 = epoxy, halo, ether bond-contg. hydrocarbyl), and CH2:CR3CO2R4 (R3 = H, Me; R4 = hydrocarbyl). Thus, 0.1 g 20.0:2.48:14.2 Me methacrylate-.gamma.-methacryloxypropyltrimethoxysilane-glycidyl methacrylate copolymer was mixed with 10 mL soln. of hydrolyzed tetraethoxysilane and applied on a PET film to give a coating showing no peeling in cross-cut adhesion test.

IC ICM C08G081-02
ICS B32B027-30; C08K003-22; C09D133-04; C09D143-00

CC 42-10 (Coatings, Inks, and Related Products)

ST **inorg org composite** coating compn **gradient**; methacryloxypropylsilane glycidyl methacrylate tetraethoxysilane copolymer

IT **Coating materials**
Hybrid **organic-inorganic** materials

(**org.-inorg. composite** materials
having compn. **gradient** for coatings with excellent
adhesion property)

IT 372082-40-1P, Glycidyl methacrylate-.gamma.-methacryloxypropyltrimethoxysilane-methyl methacrylate-tetraethoxysilane copolymer
(**org.-inorg. composite** materials
having compn. **gradient** for coatings with excellent
adhesion property)

L51 ANSWER 5 OF 10 HCAPLUS COPYRIGHT 2003 ACS

2001:704812 Document No. 135:243853 Hybrid organic-inorganic gradient materials with good adhesion and resistance to crack and their uses. Koike, Tadashi; Nakayama, Tsunehiro (Ube Nitto Kasei Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001261864 A2 20010926, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-74578 20000316.

AB The materials are used as coat layers on the surface of an org. substrate with the concn. of org. moieties becomes richer when getting closer to the substrate, and contain composites of (A) polymers bearing hydrolyzable metal groups and (B) the hydrolytic condensates of silane compds. bearing 2-4 NCO groups with silane compds. bearing 1-3 non-hydrolyzable groups and 3-1 hydrolyzable groups and having the wt.-av. mol. wt. (Mw) of >2000. Thus, mixing 2 mL a 10 g/L MIBK soln. of a Me methacrylate-.gamma.-methacryloxypropyltrimethoxysilane copolymer with 2 mL a hydrolytic condensate (Mw 2500) of methyltrimethoxysilane soln. (13.6 g in 50 mL MIBK), 2 mL tetraisocyanatosilane and 1 mL Snowtex MIBK-ST (silica), spin coating the resulting mixt. on the surface of a PMMA sheet at 1500 rpm for 20 s and drying at 80.degree. for 2 h gave a coat film with thickness 0.5 .mu.m, pencil hardness 6H, and good film evenness, adhesion and resistance to crack.

IC ICM C08J007-04
ICS C08J007-04; C08F220-10; C09D183-00; C08L083-08

CC 42-10 (Coatings, Inks, and Related Products)

IT **Composites**
(functionally **gradient**; hybrid **org.-inorg. composites** as **gradient** materials and uses)

IT **Coating materials**
Hybrid **organic-inorganic** materials
(hybrid **org.-inorg. composites** as **gradient** materials and uses)

IT 361196-27-2 361196-28-3
(hybrid **org.-inorg. composites** as **gradient** materials and uses)

IT 7631-86-9, Snowtex MIBK-ST, uses
(**inorg.** filler; hybrid **org.-inorg. composites** as **gradient** materials and uses)

IT 9011-14-7, PMMA
(substrates; hybrid **org.-inorg. composites** as **gradient** materials and uses)

L51 ANSWER 6 OF 10 HCAPLUS COPYRIGHT 2003 ACS
2001:644626 Document No. 135:196976 Hybrid **organic-inorganic composites** as **gradient** materials and their uses. Nakayama, Tsunehiro; Suzuki, Taro; Tachibana, Eisuke (Ube Nitto Kasei Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001240796 A2 20010904, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-54018 20000229.

AB The composites are applied as coat layers on the surface of a substrate and contain tetraisocyanatosilane and alkoxysilane compds. or their partial hydrolytic condensates where the materials exhibit a gradation of inorg. content from surface into coating depth. Thus, coating a mixt. of 1.75 g .gamma.-methacryloxypropyltrimethoxysilane and 1.38 g tetraisocyanatosilane in 50 mL PhMe on the surface of a Lumirror T 60 (PET) film and heating at 80.degree. for overnight gave a coat film with a gradient distribution of C and Si in the thickness.

IC ICM C09D175-04
ICS B32B009-00; C08G077-26; C09D001-00; C09D183-00; C09J001-00; C09J175-04

CC 42-10 (Coatings, Inks, and Related Products)

ST **gradient** material coating silicone silane hybrid **org inorg composite**

IT **Composites**
(functionally **gradient**; hybrid **org.-inorg. composites** as **gradient** materials and uses)

IT **Coating materials**
Composites
Hybrid **organic-inorganic** materials
(hybrid **org.-inorg. composites** as **gradient** materials and uses)

IT Polyesters, miscellaneous
(substrate; hybrid **org.-inorg. composites** as **gradient** materials and uses)

IT 356788-46-0 356788-47-1
(hybrid **org.-inorg. composites** as **gradient** materials and uses)

IT 7429-90-5, Aluminum, miscellaneous 25038-59-9, Lumirror T 60, miscellaneous
(substrate; hybrid **org.-inorg. composites** as **gradient** materials and uses)

L51 ANSWER 7 OF 10 HCAPLUS COPYRIGHT 2003 ACS
2000:631938 Document No. 133:208369 Manufacture of heat shock- and chemically resistant organic-inorganic composites with continuous concentration changes of the components. Arakawa, Motoomi; Sugata, Kazuaki; Agari, Yasuyuki; Shimada, Masayuki (Orient Chemical Industries, Ltd., Japan; Osaka City). Jpn. Kokai Tokkyo Koho JP 2000248065 A2 20000912, 12 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-50338 19990226.

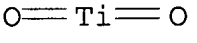
AB The composites, useful for aircrafts, electronics, medical goods, etc. (no data), are manufd. by contacting (A) solvent-sol. org.

polymers or swelled gels manufd. from metal alkoxy group-contg. org. polymers by sol-gel process, with metal oxides, metal alkoxides, their partial hydrolyzates, or their polymers with diffusing the solns. each other or from one side to the other. Triethoxysilyl-terminated polycarbonate (Mn 7500) was reacted with 1N HCl in THF to give a swelled gel, on which Si(OEt)4 was added and left for 1 day. The resulting 90 .mu.m-thick film with gradient component showed no cracking after -20.degree. and 120.degree. heat shock cycle, and showed good resistance to MeOH, EtOH, Me2CO, CHCl3, etc.

IT **13463-67-7, Titania**, uses
(manuf. of heat shock- and chem. resistant org.-inorg. composites with continuous concn. changes of the components)

RN 13463-67-7 HCAPLUS

CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



IC ICM C08G077-00
ICS C08G079-00; C08K003-22; C08L101-00

CC 35-8 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 57

ST chem resistance **gradient org inorg composite**; heat shock resistance gradient ceramer manuf; ethoxysilane polycarbonate gradient ceramer manuf; sol gel ceramer manuf chem resistance

IT 1314-23-4, Zirconia, uses **13463-67-7, Titania**, uses
(manuf. of heat shock- and chem. resistant org.-inorg. composites with continuous concn. changes of the components)

L51 ANSWER 8 OF 10 HCAPLUS COPYRIGHT 2003 ACS

2000:61311 Document No. 132:226085 Recent advancement of Tyranno/SiC composites R&D. Nakayasu, T.; Sato, M.; Yamamura, T.; Okamura, K.; Katoh, Y.; Kohyama, A. (Ube Industries, Ltd., Yamaguchi, 755-8633, Japan). Ceramic Engineering and Science Proceedings, 20(4, 23rd Annual Conference on Composites, Advanced Ceramics, Materials, and Structures: B, 1999), 301-308 (English) 1999. CODEN: CESPDK. ISSN: 0196-6219. Publisher: American Ceramic Society.

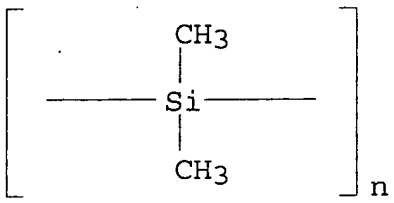
AB Ceramic matrix composites were studied for structural and thermal applications in high efficiency and environmental conscious fusion energy systems. To up-**grade** their low activation characteristics, thermal cond. and high temp. properties, the crystd. Si-Al-C fiber (Tyranno-SA) and pyrolyzed materials obtained from polymethylsilane (PMS) including polycarbosilane (PCS) were applied as reinforcing fiber and matrix, resp. The new Tyranno-SA/SiC composites with near stoichiometry matrix presented excellent improvements in heat resistance and thermal cond. from those with nonstoichiometry matrixes. The remarkable improvements in tensile properties and fatigue characteristics, at 1300.degree.,

were attributed using polymetalocarbosilane (PMC) polymer with inorg. powder fillers, BMAS, as the matrix precursor.

IT **28883-63-8**, Poly-dimethylsilane
(recent advancement in Tyranno/SiC composites research and development)

RN 28883-63-8 HCAPLUS

CN Poly(dimethylsilylene) (8CI, 9CI) (CA INDEX NAME)



CC 57-2 (Ceramics)

IT Synthetic fibers
(silicon carbide-**titanium oxide**; recent advancement in Tyranno/SiC composites research and development)

IT **28883-63-8**, Poly-dimethylsilane
(recent advancement in Tyranno/SiC composites research and development)

L51 ANSWER 9 OF 10 HCAPLUS COPYRIGHT 2003 ACS

1998:289551 Document No. 129:31304 Silicon carbide-based fiber-reinforced ceramic composite materials with good heat resistance, high strength, and high toughness. Shibue, Masaki; Shioji, Yasuhiro (Ube Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 10120472 A2 19980512 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1996-279179 19961022.

AB The title materials contain inorg. fibers, which comprise Si-C-Ti-O inner portions and Si-C-Ti-N-O surface layers (thickness .ltoreq.500 nm) having increasing **gradient** of N content toward the fiber surface.

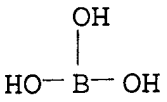
IT **185305-11-7P**
(ceramics from; ceramics reinforced with Ti- and O-contg. silicon carbide fibers having N-contg. surface layers for good heat resistance and high strength)

RN 185305-11-7 HCAPLUS

CN Boric acid ((H3BO3)), polymer with 1-butanol titanium(4+) salt, dichlorodimethylsilane and dichlorodiphenylsilane (9CI) (CA INDEX NAME)

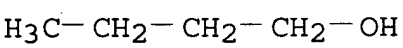
CM 1

CRN 10043-35-3
CMF B H3 O3



CM 2

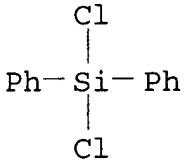
CRN 5593-70-4
CMF C4 H10 O . 1/4 Ti



1/4 Ti(IV)

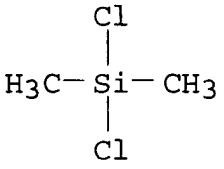
CM 3

CRN 80-10-4
CMF C12 H10 Cl2 Si



CM 4

CRN 75-78-5
CMF C2 H6 Cl2 Si



IC ICM C04B035-80
CC 57-2 (Ceramics)
IT **185305-11-7P**

(ceramics from; ceramics reinforced with Ti- and O-contg. silicon carbide fibers having N-contg. surface layers for good heat resistance and high strength)

IT 122466-73-3P, Titanium carbide oxide silicide 207920-08-9P, Carbon nitrogen silicon **titanium oxide**
(ceramics reinforced with Ti- and O-contg. silicon carbide fibers having N-contg. surface layers for good heat resistance and high strength)

IT 161416-26-8P, Boron carbon silicon **titanium oxide**
(ceramics; ceramics reinforced with Ti- and O-contg. silicon carbide fibers having N-contg. surface layers for good heat resistance and high strength)

L51 ANSWER 10 OF 10 HCAPLUS COPYRIGHT 2003 ACS

1991:252374 Document No. 114:252374 Adhesion promotion and corrosion prevention using thin anisotropic coatings. Holmes-Farley, S. Randall; Yanyo, Lynn C. (Thomas Lord Res. Cent., Lord Corp., Cary, NC, 27512-8225, USA). Journal of Adhesion Science and Technology, 5(2), 131-51 (English) 1991. CODEN: JATEE8. ISSN: 0169-4243.

AB Using sol-gel technol., thin org./ceramic (ceramer) coatings were applied to metal surfaces to enhance such surface properties as adhesion promotion and corrosion prevention. Isotropic coatings are effective in certain applications such as corrosion prevention, but the formation of anisotropic (functionally gradient) coatings enables greater flexibility over the resulting properties. Isotropic coatings derived from Si(OEt)4, for example, effectively inhibit corrosion while being only 100-1000 .ANG. thick. These coatings do not, however, promote adhesion. Thin coatings made from traditional silane adhesion promoters alone are unable to prevent corrosion of metallic substrates. Using monomers with appropriate reactivities enables single-step synthesis of anisotropic coatings that can both promote adhesion and prevent corrosion. These types of anisotropic coatings enable the phys. and chem. properties of a coating to be varied as a function of the distance from the substrate and confer properties of the substrate that would not be possible from a single isotropic coating. The principle behind the construction of these anisotropic coatings is general enough that it can be used in many applications where microengineering of surface structures is important.

CC 57-2 (Ceramics)
Section cross-reference(s): 38

ST functionally **gradient** coating **org inorg composite**; sol gel functionally gradient coating ceramer; adhesion promotion sol gel coating; corrosion prevention sol gel coating

IT **Coating materials**
(ceramer, on metal for adhesion promotion and corrosion prevention)

IT **Coating process**
(sol-gel, with functionally **gradient org.-inorg.** hybrid **composites** on metal for adhesion promotion and corrosion prevention)

=> d l52 1-13 cbib abs hitstr hitind

L52 ANSWER 1 OF 13 HCAPLUS COPYRIGHT 2003 ACS
2001:874459 Document No. 136:21032 Coating agents forming films containing gradient components. Takami, Kazuyuki; Watabe, Toshiya; Hashimoto, Kazuhito; Fujishima, Akira (Ube Nitto Kasei Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001335737 A2 20011204, 13 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-158851 20000529.
AB Title agents comprise (A) copolymers (A1) prepd. from ethylenic unsatd. compds. contg. **metal** groups capable to hydrolyze into **metal** oxides, **metal**-free ethylenic unsatd. compds., and **metal**-free fluoroalkyl-contg. ethylenic unsatd. compds. or polymers (A2) contg. (a) **metal** groups capable to hydrolyze into **metal** oxides and (b) functional groups capable to coagulate under drying and to inhibit coagulation in solvents (B) hydrolyzates of mixts. contg. **metal** compds. capable to hydrolyze into **metal** oxides and are applied on org. substrates to form org. **polymer/ metal** oxide **composite films** contg. **gradient metal** oxide content. A PET film was coated with an org. soln. contg. Si(OEt)4 hydrolyzate and 94:5:1 Me methacrylate-3-methacryloxypropyltrimethoxysilane-1H, 1H, 11H-perfluoroundecyl methacrylate copolymer and dried at 80.degree. for 24 h, soaked in NH3 water, and dried at room temp. to form a film with good adhesion and gradient SiO2 content.
IC ICM C09D143-00
ICS C08F008-42; C08F220-24; C08F230-04; C09D133-14
CC 42-10 (Coatings, Inks, and Related Products)
IT **Coating materials**
(tetralkoxysilane-contg. acrylic fluoropolymer coatings forming films with gradient SiO2 content)

L52 ANSWER 2 OF 13 HCAPLUS COPYRIGHT 2003 ACS
2000:817563 Document No. 133:351174 Electric discharge treatment of plastic film for fabrication of gradient refractive index material. Yuasa, Motokazu (Sekisui Chemical Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2000319428 A2 20001121, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-132787 19990513.
AB Title method, which requires no high vacuum, comprises treating a plastic film substrate with elec. discharge between a pair of electrodes with a pulsed applying voltage of .ltoreq.100 .mu.s for field intensity of 1-100 KV/cm, and forcefully drying the film.
IT **13463-67-7**, **Titania**, uses
(fabrication of gradient refractive index material by elec. discharge)
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)

O=Ti=O

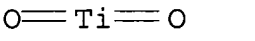
IC ICM C08J007-00
ICS B01J019-08; B32B007-02; G02B001-11
CC 38-2 (Plastics Fabrication and Uses)
Section cross-reference(s): 42, 73, 76
IT Acrylic **polymers**, uses
(**coatings**; fabrication of **gradient** refractive index material by elec. discharge)
IT **Coating process**
(plasma spraying; fabrication of gradient refractive index material by elec. discharge)
IT **13463-67-7**, **Titania**, uses
(fabrication of gradient refractive index material by elec. discharge)

L52 ANSWER 3 OF 13 HCAPLUS COPYRIGHT 2003 ACS
2000:645650 Document No. 133:226749 Thermally protective cement-polymer coating compositions of the ablative type. Cambon, Christian (Etat Francais, Delegue General Pour L' Armement, Fr.). Eur. Pat. Appl. EP 1035087 A1 20000913, 16 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (French). CODEN: EPXXDW. APPLICATION: EP 2000-400591 20000306. PRIORITY: FR 1999-2793 19990305.
AB The title compns. contain two sep. prepd. and mixed components A and B. The liq. component A contains an aq. emulsion of halogen-contg. polymer (e.g., chlorinated vinylidene-acrylic copolymer) 20-95, an aq. emulsion of polysiloxane 5-80, and org. or mineral micro-fibers (esp. Kevlar) 0-5 wt.%. The solid component B contains a powder of hydraulic binder 30-90, glass fibers or crushed glass waste 0-30, hollow ceramic or glass microspheres 0.5-15, and ZnO powder 0.1-20 wt.%. Optionally, the component A may content a third polymer compatible with the aq. emulsion, e.g., an acetate vinyl acrylic copolymer or a phenolic resin, and component B may content FeO, ZnB4O7, and **TiO2** powders. The A-to-B ratio is from 1:0.5 to 1:2. The compns. are suitable for protection of vertical or horizontal surfaces (esp. support plates on military ships) from hot exhaust gas flow of missiles. The service life of the coating is 1-3 missile launchings. The coating compns. are easy reparable.
IT **13463-67-7**, **Titanium oxide (TiO2)**, uses
(cement-polymer coating compns. contg.; cement-polymer coating compns. for thermal protection)
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)

O=Ti=O

IC ICM C04B028-04
ICS C04B040-06
CC 58-2 (Cement, Concrete, and Related Building Materials)
IT Cement (construction material)
(hydraulic **grade**, cement-**polymer** **coating** compns. contg.; cement-**polymer** coating compns. for thermal protection)
IT **Coating materials**
(thermal-resistant; cement-polymer coating compns. for thermal protection)
IT 1314-13-2, Zinc oxide (ZnO), uses 12007-67-9, Zinc borate (ZnB4O7) **13463-67-7**, **Titanium oxide (TiO2)**, uses 14808-60-7, Plastorit, uses 24980-58-3, Vinyl Acetate-acrylic acid copolymer
(cement-polymer coating compns. contg.; cement-polymer coating compns. for thermal protection)

L52 ANSWER 4 OF 13 HCAPLUS COPYRIGHT 2003 ACS
2000:462590 Document No. 134:72915 Application of organic and inorganic composition gradient film for photo-catalytic coating. Takami, Kazuyuki (Advanced Science Technology Research Center, University of Tokyo, Tokyo-to, Meguro-ku, Komaba, 153-8904, Japan). Kogyo Zairyo, 48(6), 49-52 (Japanese) 2000. CODEN: KZAIA5. ISSN: 0452-2834. Publisher: Nikkan Kogyo Shinbunsha.
AB A review with 12 refs.
IT **13463-67-7**, **Titania**, uses
(application of **TiO2**-coated **polymeric** **gradient film** for photo-catalytic coating)
RN 13463-67-7 HCAPLUS
CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



CC 42-0 (Coatings, Inks, and Related Products)
IT **Coating materials**
(application of **TiO2**-coated **polymeric** **gradient film** for photo-catalytic coating)
IT Polymers, uses
(application of **TiO2**-coated **polymeric** **gradient film** for photo-catalytic coating)
IT **13463-67-7**, **Titania**, uses
(application of **TiO2**-coated **polymeric** **gradient film** for photo-catalytic coating)

L52 ANSWER 5 OF 13 HCAPLUS COPYRIGHT 2003 ACS
1999:518621 Document No. 131:158928 Articles covered with wear-, scratch-, heat-, chemical-, and weather-resistant coatings having compositional gradients and their manufacture. Fukushima, Hiroshi; Tamura, Misao; Yano, Kazuhisa; Okamoto, Kazuo; Fukushima, Yoshiaki; Tani, Masaaki; Kito, Osamu; Nagai, Takayuki; Mizutani, Katsuya

(Mitsubishi Rayon Co., Ltd., Japan; Toyota Central Research and Development Laboratories, Inc.; Toyoda Tsusho K. K.). Jpn. Kokai Tokkyo Koho JP 11221880 A2 19990817 Heisei, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-307140 19981028. PRIORITY: JP 1997-295613 19971028.

AB The title coatings with good durability and adhesion onto substrate, are formed from compns. contg. (A) 5-95 parts laminar hybrid substances with covalent bonds between org. layers formed by hydrolytic condensation of organoalkoxysilanes and inorg. crystals having center **metals** selected from Mg, Al, Ni, Co, Cu, Mn, Fe, Li, V, Zr, Ca, Y, Ga, In, Tl, Sb, Rh, Ru, Pd, Sn, Zn, Pb, and Ce and (B) 5-95 parts (meth)acryloyloxy group-contg. compds. The coatings have continuous or laminar gradient compositional ratio of (A) and (B) from the substrate sides to the atm. sides. The coatings are manufd. by coating substrates with compns. contg. (A), (B), and (C) 0.1-10 parts active energy ray-sensitive radical **polymn.** initiators, heating the **coatings** to form compositional **gradients** of (A) and (B), and irradiating the coatings with energy ray. Thus, 49.6 parts 3-methacryloyloxypropyltrimethoxysilane and 2.03 parts MgCl2.6H2O were mixed at alk. pH to obtain a hybrid polymer, 45 parts of which was mixed with urethane diacrylate (manufd. from IPDI and 2-hydroxypropyl acrylate) 15, 1,6-hexanediol diacrylate 55, Irgacure 184 (1-hydroxycyclohexyl Ph ketone) 3, Tinuvin P (UV absorber) 8, and solvent 190 parts to obtain a compn. The compn. was applied on Lexan LS 2 (polycarbonate plate) and irradiated with a high-pressure Hg lamp to give a coating showing haze 11.9 after 500 cycle in Taber wear test, good adhesion, and good resistance to hot water, chems. (Me2CO, PhMe, NaOH, H2SO4), and weather.

IC ICM B32B027-00
ICS B05D005-00; B05D007-24; C08F002-48; C08F283-12; C09D004-00
CC 42-10 (Coatings, Inks, and Related Products)

IT **Coating materials**
(abrasion-resistant; articles covered with wear-, scratch-, heat-, chem.-, and weather-resistant coatings having compositional gradients of inorg.-org. hybrid Si polymers and acrylic resins)

IT **Coating materials**
(chem. resistant; articles covered with wear-, scratch-, heat-, chem.-, and weather-resistant coatings having compositional gradients of inorg.-org. hybrid Si polymers and acrylic resins)

IT **Coating materials**
(heat-resistant; articles covered with wear-, scratch-, heat-, chem.-, and weather-resistant coatings having compositional gradients of inorg.-org. hybrid Si polymers and acrylic resins)

IT Silsesquioxanes
(reaction products with **metal** chlorides; articles covered with wear-, scratch-, heat-, chem.-, and weather-resistant coatings having compositional gradients of inorg.-org. hybrid Si polymers and acrylic resins)

IT **Coating materials**
(scratch-resistant; articles covered with wear-, scratch-, heat-,

chem.-, and weather-resistant coatings having compositional gradients of inorg.-org. hybrid Si polymers and acrylic resins)

IT **Coating materials**
(weather-resistant; articles covered with wear-, scratch-, heat-, chem.-, and weather-resistant coatings having compositional gradients of inorg.-org. hybrid Si polymers and acrylic resins)

L52 ANSWER 6 OF 13 HCAPLUS COPYRIGHT 2003 ACS
1997:584420 Document No. 127:191966 Pigment-grade corrosion inhibitor hybrid compositions and protecting **metal** substrates with films containing these compositions. Sinko, John (Wayne Pigment Corp., USA). PCT Int. Appl. WO 9725274 A1 19970717, 70 pp. DESIGNATED STATES: W: AU, CA, MX; RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1997-US138 19970103. PRIORITY: US 1996-587817 19960105.

AB A corrosion-inhibiting compn. for application to a **metal** substrate, such as steel, silver, copper or aluminum, contains a film-forming org. coating compn. and a pigment phase of a stable unitary hybrid material, which contains org. and inorg. solid phase constituents interfaced at a crystallite level that are inseparable by phys. sepn. procedures and display uniphase behavior. The inorg. phase includes a cation selected from Zn, Al, Mg, Ca, Sr, Ti, Zr, Ce and Fe and an anion selected from phosphates, polyphosphates, phosphites, molybdates, silicates and cyanamides. The org. phase includes zinc or alkylammonium (for example: cyclohexylammonium, dicyclohexylammonium, octylammonium) salts of org. mercapto- and thio- compds. or their alkyl-substituted derivs. A typical pigment was symbolized by the phase-compn. formula 0.05Zn(MBT)2/ZnNCN where MBT is mercaptobenzothiazole.

IC ICM C01C003-16
ICS C09C001-04; C09D005-08; C23F011-00

CC 42-5 (Coatings, Inks, and Related Products)
Section cross-reference(s): 55, 56

IT Alkyd **resins**
(Duramac 2455, **coating**; pigment-**grade** corrosion-inhibiting org.-inorg. hybrid compns. and protecting **metal** substrates with films contg. these compns.)

IT **Coating materials**
(anticorrosive; pigment-grade corrosion-inhibiting org.-inorg. hybrid compns. and protecting **metal** substrates with films contg. these compns.)

IT Epoxy **resins**, uses
(polyamide-hardened, **coating**; pigment-**grade** corrosion-inhibiting org.-inorg. hybrid compns. and protecting **metal** substrates with films contg. these compns.)

IT 194227-69-5P
(coating; pigment-grade corrosion-inhibiting org.-inorg. hybrid compns. and protecting **metal** substrates with films contg. these compns.)

IT 149-30-4, 2-Mercaptobenzothiazole 420-04-2, Cyanamide 1569-69-3, Cyclohexyl mercaptan 2492-26-4 2801-07-2, Sodium

cyclohexyldithiocarbamate 7631-95-0, Sodium molybdate 10042-76-9, Strontium nitrate 14394-29-7 20611-81-8, Disodium cyanamide 25100-13-4 53378-51-1 55906-42-8 71591-75-8
(corrosion inhibitor precursor; pigment-grade corrosion-inhibiting org.-inorg. hybrid compns. and protecting **metal** substrates with films contg. these compns.)

IT 155-04-4P, Zinc bis(mercaptobenzothiazole) 3030-80-6P 4563-55-7P 13470-04-7P 14882-56-5P 20654-08-4P, Zinc cyanamide 54502-98-6P 56841-78-2P 63302-15-8P 193980-03-9P, Zinc bis(2-mercaptothiazoline) 193980-04-0P
(pigment-grade corrosion-inhibiting org.-inorg. hybrid compns. and protecting **metal** substrates with films contg. these compns.)

IT 194227-70-8P
(pigment-grade corrosion-inhibiting org.-inorg. hybrid compns. and protecting **metal** substrates with films contg. these compns.)

IT 7779-90-0, Zinc phosphate 10101-39-0
(pigment-grade corrosion-inhibiting org.-inorg. hybrid compns. and protecting **metal** substrates with films contg. these compns.)

IT 7429-90-5, Aluminum, miscellaneous 7440-22-4, Silver, miscellaneous 7440-50-8, Copper, miscellaneous 12597-69-2, Steel, miscellaneous
(substrate; pigment-grade corrosion-inhibiting org.-inorg. hybrid compns. and protecting **metal** substrates with films contg. these compns.)

L52 ANSWER 7 OF 13 HCAPLUS COPYRIGHT 2003 ACS

1995:387299 Document No. 123:21757 Optical **recording** on **metal**-polymer films. Kryuchin, Andrey A.; Petrov, Vyacheslav V.; Kostenko, Igor O.; Klimenko, Vladimir A. (Institute of Information Recording Problems, Kiev, Ukraine). Proceedings of SPIE-The International Society for Optical Engineering, 2297(Photonics for Processors, Neural Networks, and Memories II), 488-91 (English) 1994. CODEN: PSISDG. ISSN: 0277-786X.

AB The results of the exptl. investigation of the interaction process of focused laser radiation with **metal-polymer films** with uniform and **gradient metal** spreading are presented. A model construction of this process and focused laser radiation diffraction on pits are discussed. A review with 7 refs.

CC 74-0 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST review optical **recording metal** polymer film

IT Optical diffraction
(optical **recording** on **metal**-polymer films)

IT **Metals**, processes
Polymers, processes
(optical **recording** on **metal**-polymer films)

IT **Recording**
(optical, optical **recording** on **metal**-polymer

films)

L52 ANSWER 8 OF 13 HCAPLUS COPYRIGHT 2003 ACS
1994:247385 Document No. 120:247385 X-ray photoelectron spectroscopic study of the depth-dependent concentration gradient of two-component antifriction polymer coatings. Ginzburg, B. M.; Pozdniakov, A. O.; Redkov, B. P.; Tochilnikov, D. G. (Inst. Probl. Mashinoved., St.-Petersburg, Russia). Trenie i Iznos, 14(2), 383-8 (Russian) 1993. CODEN: TRIZD6. ISSN: 0202-4977.
AB Layer anal. of 2-component polymeric coatings indicate that the **metal**-coating boundary is enriched with the functional group-contg. component, leading to good adhesion. Upon application of second layer, the sign of the concn. gradient in the second layer changes (gradient inversion). The 2-component coatings were prepd. from trifluorochloroethylene-vinylidenefluoride copolymer, epoxy resin, methylphenylsiloxane, and polybenzimidazole binders and AF-2 amine-based crosslinking agent were used in the coatings.
CC 42-4 (Coatings, Inks, and Related Products)
ST concn **gradient** antifriction **polymer coating**; fluoropolymer antifriction coating **metal**; epoxy resin antifriction coating **metal**; siloxane antifriction coating **metal**; polybenzimidazole antifriction coating **metal**
IT **Coating materials**
(antifriction, depth-dependent concn. gradient of two-component)

L52 ANSWER 9 OF 13 HCAPLUS COPYRIGHT 2003 ACS
1986:20506 Document No. 104:20506 Vacuum-**metalized** polyethylene films. Yoshino, Tadao; Itaba, Yasushi; Saito, Keichiro; Yoshifuji, Hiroshi; Tabuchi, Joichi (Toa Nenryo Kogyo K. K., Japan). Jpn. Kokai Tokkyo Koho JP 60196341 A2 19851004 Showa, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1984-51138 19840319.
AB Oriented ethylene **polymer films** with crosslinking **graded** in the thickness direction when vacuum-**metalized** have improved gas-barrier properties, and are useful in packaging food. Thus, 0.6-mm high-d. polyethylene film was electron-cured at 20 Mrades (gel fraction 50% at the surface and 0% at the center) and drawn 4-fold lengthwise and 5-fold transversely at 130.degree. to give a 30-.mu. film. After corona discharge treatment (surface tension 54 dyne/cm), the film was coated with 500 .ANG. Al at 5 .times. 10-5 mm to give a film with gloss 150%, moisture permeation rate 0.40 g/m2-24 h, O permeation rate 35 mL/m2-day, and crosscut adhesion 100/100 after 0 or 24 h at 40.degree. and 90% relative humidity. A **metalized** film with uniform gel fraction in the thickness direction (55%) had moisture permeability 5.2 g/m2-day and O permeability 1700 mL/m2-day.
IC ICM B32B015-08
ICS B65D065-02
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 56

ST polyethylene metalization vacuum crosslinking; packaging polyethylene film **metalized**; electron beam crosslinking polyethylene; aluminization vacuum polyethylene film; food packaging film **metalized**

IT **Coating process**
(vacuum, of **metals** on polyolefin films, gradational crosslinking for)

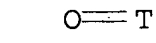
L52 ANSWER 10 OF 13 HCAPLUS COPYRIGHT 2003 ACS
1985:205458 Document No. 102:205458 Control of pigment dispersion in wet or dry paint films by a flocculation gradient measurement device. Rutherford, D. J.; Simpson, L. A. (Tioxide, Calais, Fr.). Double Liaison - Chimie des Peintures, 31(348), 407-14, II-IX (English/French) 1984. CODEN: DLCPDY. ISSN: 0291-8412.

AB An app. was designed to det. flocculation gradient (FG) of pigment (i.e., **TiO2**) in dry and wet alkyd paint films by measuring the amt. of IR radiation which is back-scattered as a function of film thickness. An increase in FG resulted in a decrease of opacity of dry film, and FG .ltoreq.0.5 had little effect on the color of paint, whereas a significant increase in yellowness occurred with severely flocculated paints. For the dispersed paints FG was unaffected, whereas for the flocculated paints an increase in pigment vol. concn. produced an increase in FG; the more flocculent the paint, the greater the increase in FG . Particle size rather than extender type (i.e., calcite, clay, dolomite, talc) was more important factor which affects FG, and FG values of extenders were lower than those of **TiO2**. The order of performance in terms of FG value was the same for wet and dry paint films, and FG of the dry films was greater than that of wet films.

IT **13463-67-7**, uses and miscellaneous
(flocculation gradient of, in alkyd resin coating, detn. of)

RN 13463-67-7 HCAPLUS

CN Titanium oxide (TiO2) (8CI, 9CI) (CA INDEX NAME)



CC 42-6 (Coatings, Inks, and Related Products)

ST flocculation gradient measurement **titanium dioxide** ; alkyd resin coating pigment flocculation; extender effect pigment flocculation gradient

IT **Coating materials**
(alkyd resins, **titania** in, flocculation gradient of)

IT Carbon black, properties
Clays, properties
(flocculation gradient of **titania** in alkyd resin coatings contg.)

IT Flocculation
(of **titania**, in alkyd **resin coatings** , **gradient** detn. of)

IT 147-14-8 2425-85-6 13397-26-7, uses and miscellaneous

14807-96-6, uses and miscellaneous 16389-88-1, properties
(flocculation gradient of **titania** in alkyd resin coatings contg.)
IT **13463-67-7**, uses and miscellaneous
(flocculation gradient of, in alkyd resin coating, detn. of)

L52 ANSWER 11 OF 13 HCAPLUS COPYRIGHT 2003 ACS
1982:618192 Document No. 97:218192 Manufacture of **coating-grade polymers**. (Dainippon Ink and Chemicals, Inc., Japan). Jpn. Kokai Tokkyo Koho JP 57117510 A2 19820722 Showa, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1981-3756 19810116.
AB The polymn. of 100 parts monomer(s) consisting of 20-100% styrene, acrylonitrile, and/or C1-4 alkyl methacrylate and 0-80% other comonomers in the presence of org. solvent 0-400, H2O2 0.05-15, and a reducing agent 0.01-10 parts gave **coating-grade polymers**. For example, the copolymn. of styrene 400, Et acrylate 585, and methacrylic acid 15 parts in the presence of 60% H2O2 83.3, FeCl2 15, and BuOAc 670 parts at 120.degree. gave a **coating-grade copolymer** (I) [25035-68-1]. A **TiO2**-pigmented compn. contg. 70:20:10 I-butylated melamine resin-Epiclon 1050 gave a baked coating (on steel) superior in hardness and impact, water, solvent, soiling, and weather resistance to a coating contg. I prepd. in the presence of tert-Bu perbenzoate in place of H2O2-FeCl2.
IC C08F220-02; C08F212-08
CC 42-10 (Coatings, Inks, and Related Products)
Section cross-reference(s): 55
IT Polymerization catalysts
(redox, hydrogen peroxide-contg., for **coating-grade** acrylic **polymer** manuf.)
IT **Coating materials**
(solvent-based, acrylic polymers)
IT 60-24-2 7681-57-4 7758-94-3
(redox catalysts contg. hydrogen peroxide and, for manuf. of **coating-grade** acrylic **polymers**)
IT 7722-84-1, uses and miscellaneous
(redox catalysts contg., for manuf. of **coating-grade** acrylic **polymers**)

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1977:440389 Document No. 87:40389 Light filters with variable optical density. Koryukin, A. V.; Vesnitskaya, G. S.; Gerasimova, E. M.; Gudimov, M. M.; Markina, E. F.; Klitsov, A. A.; Kovtun, A. T.; Beriev, G. M.; Vasil'chenko, V. L. (USSR). Ger. DE 2420435 19770113, 4 pp. (German). CODEN: GWXXAW. APPLICATION: DE 1974-2420435 19740426.
AB The title filters, useful in the windows of vehicles, are prepd. without the use of moveable app. in the vacuum chamber by vacuum-depositing the filter on a methacrylate polymer with a standoff between evaporator and substrate which is varied according to the desired optical d. Thus, cuprous oxide sulfide [63091-14-5]

(a semiconductor giving no **metallic** reflection) is vacuum-deposited on curved 1.5-mm polymethacrylate sheet from W bands with standoff 300 mm from the upper portion of the sheet, giving a coating 240 and 5-10 nm thick at the top and bottom, resp., with resp. light transmittance 5 and 90% and optical d. 1.3 and 0.05, useful in aircraft cabin windows.

IC C23C013-00

CC 37-3 (Plastics Fabrication and Uses)

IT **Coating process**
(vacuum, of cuprous oxysulfide on methacrylate polymers, for filters with graduated optical d.)

IT 79-41-4D, esters, **polymers** 63091-14-5
(optical filters, vacuum **coating** of, for **graduated** optical d.)

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1974:122467 Document No. 80:122467 Accelerated testing of durable coatings. Oakley, E.; Marron, J. J. (Cent. Lab., Tioxide Int. Ltd., Stockton-on-Tees/Teesside, UK). Journal of the Oil and Colour Chemists' Association, 57(1), 22-9 (English) 1974. CODEN: JOCCAB. ISSN: 0030-1337.

AB A correlation of natural weathering of acrylic-melamine coatings with different accelerated testing methods was studied. Degrdn., as obsd. by rate of loss of gloss, of acrylic **copolymer** -melamine **resin coatings** contg. 9 **grades** of **TiO2** was evaluated at 3 different outdoor locations and 3 accelerated testing app. Emmaqua app., using natural sunlight as the source of radiant energy, gave the highest correlation with natural weathering.

CC 42-1 (Coatings, Inks, and Related Products)

IT **Coating materials**
(accelerated and natural weathering of, correlation of)